

41970/B/1



THE CHIRURGICAL WORKS
OF

PERCIVALL POTT, F.R.S.

SURGEON

TO ST. BARTHOLOMEW'S HOSPITAL

A NEW EDITION, WITH HIS LAST CORRECTIONS.

To which are added,

A SHORT

Account of the Life of the Author,

A METHOD OF

CURING THE HYDROCELE BY INJECTION,

AND OCCASIONAL

NOTES AND OBSERVATIONS.

BY

SIR JAMES EARLE, F.R.S.

SURGEON

EXTRAORDINARY TO THE KING, &c. &c.

A certis potius et exploratis petendum esse præsidium; id est, his quæ Experientia in ipsis curationibus docuerit; sicut in cæteris omnibus artibus: nam ne agricolam quidem aut gubernatorem disputatione, sed usu fieri.

A. CORN. CELSUS.

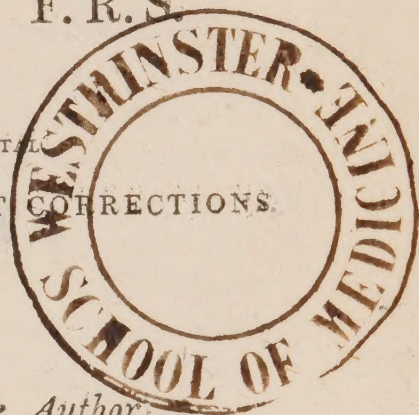
IN THREE VOLUMES.

VOL. II.

LONDON:

Printed by Wood and Innes, Poppin's Court, Fleet Street,
FOR J. JOHNSON; SCATCHERD AND LETTERMAN; CUTHELL
AND MARTIN; LONGMAN, HURST, REES, AND ORME; CADELL
AND DAVIES; B. CROSBY, AND CO.; JOHN CALLOW; JOHN
RICHARDSON; JAMES RICHARDSON; R. SCHOLEY; E. COX; AND
W. GRACE.

1808.



95400

THE CHEMICAL WORKS

OF

PERCIVAL POTTS, F.R.S.

BY

A NEW EDITION, WITH HIS LAST REVISIONS

BY

A. J. B. S.

Author of the 'Life of the Author'

A METHOD OF

CHANGING THE HYPODERM BY INJECTION

AND

NOTES AND OBSERVATIONS

BY

DR. JAMES W. WELLCOME



A new edition of the 'Life of the Author' is now published, and is the most complete and accurate work of the kind ever published. It is the result of the most careful and exhaustive research, and is the most valuable work of the kind ever published. It is the most complete and accurate work of the kind ever published. It is the result of the most careful and exhaustive research, and is the most valuable work of the kind ever published.

THE CHEMICAL WORKS

VOL. II.

BY

PERCIVAL POTTS, F.R.S.

WITH HIS LAST REVISIONS

BY

A. J. B. S.

Author of the 'Life of the Author'

1884

CONTENTS

OF

VOL. II.

	Page
<i>A TREATISE on RUPTURES</i>	11
<i>Those capable of easy and immediate Reduction</i>	40
<i>Those that are found irreducible, but not in a State of Inflammation</i>	45
<i>Those which are reducible, but attended with Pain and Hazard</i>	55
<i>Those which are in such a State as to be irreducible by the mere Hand, and in which a Chirurgical Operation is necessary for the Preservation of the Life of the Patient,</i>	66
<i>Parts composing a Rupture, when so diseased as to be unfit for immediate Reduction, what then becomes necessary .</i>	99
<i>Ruptures in Females</i>	107
<i>The crural or femoral Hernia</i>	110
<i>The congenial Hernia</i>	114
<i>The umbilical Rupture</i>	120
<i>The ventral Hernia, &c.</i>	125
<i>Attempts toward a radical Cure</i>	129
<i>Observations and Cases relative to Ruptures</i>	141
<i>Intestinal Herniæ</i>	166
<i>Congenial Herniæ</i>	183
<i>Hernia Vesicæ Urinariæ</i>	205
<i>An ovarian Hernia</i>	210
<i>A Treatise on the HYDROCELE, or watery Rupture, and other Diseases of the TESTICLE, its Coats and Vessels .</i>	213
<i>Distinction between true and false Herniæ</i>	217
<i>Of the Hydrocele in general</i>	219

Contents.

	Page
<i>Anatomical Structure of the Parts concerned</i>	226
<i>Anasarcous Tumour of the Scrotum</i>	243
<i>Distinction of the three Sorts of Hydrocele of the Cells of the Tunica communis</i>	255
<i>The encysted Hydrocele of the Tunica communis</i>	272
<i>Hydrocele of the Tunica vaginalis Testis</i>	286
<i>Method of palliative Cure of the Hydrocele of the Tunica vaginalis Testis</i>	286
<i>Means for a radical Cure of the Hydrocele of the Tunica vaginalis</i>	326
<i>The Hematocele, or Tumour from Blood</i>	352
<i>Hydrocele in the Sac of a Hernia</i>	376
<i>The Pneumatocele, Varicocele, Circoccele, Sarcoccele, and Hydrosarcoccele</i>	382
<i>The Sarcoccele, or diseased Testicle</i>	387

THE

PREFACE.

THE disease which makes the subject of the following tract, is one in which mankind are, on many accounts, much interested. No age, sex, rank, or condition of life, is exempt from it; the rich, the poor, the lazy, and the laborious, are equally liable to it; it produces certain inconvenience to all who are afflicted by it; it sometimes puts the life of the patient in such hazard, as to require one of the most delicate operations in surgery; and it has in all times, from the most ancient down to the present, rendered those who labour under it subject to the most iniquitous frauds and impositions.

The generality of mankind look upon a rupture as an imperfection in their form, as a disease which impairs their strength, and lessens their generative faculty: which apprehensions, though absolutely groundless, are so firmly rooted, in the majority of those who are afflicted with the disorder, as to make them not a little miserable. They who lie in wait to avail themselves of the weaknesses of the infirm and

fearful, are well acquainted with these fears, and very lucrative use do they make of them. They well know, that the man who regards his disorder as an imperfection in his form, or as a cause of any debility, more particularly a venereal one, will be very unwilling to have it known, and as glad to get rid of it, at any expense or trouble: by this means these impostors are furnished with opportunities of subjecting the ignorant and credulous to tedious confinements, painful applications, and even hazardous operations; and of defrauding the timorous and bashful of large sums of money, for imaginary diseases, and pretended cures.

Complaints of this sort, coming from the profession, are generally ill received; and, being set to the account of prejudice, interest, and craft, are very little regarded; but in this mankind do us great injustice. A rupture is a disease, which, if judiciously and honestly treated from the first, can never be productive of much profit to a surgeon; it requires very little attendance, and neither external application nor internal medicine. Though the reduction of the gut, and the application of a proper bandage, are necessary, yet this is in general so soon and so easily accomplished, that it must be obvious that no great emolument can from thence be derived; and therefore, if the profession may be allowed to be impartial in any thing which relates to themselves, I think they may in this, from which they never can reap considerable profit, unless the disease has been greatly neglected, or ill-treated. It is from fraud and

delusion principally that such advantage can be derived; it is from the patient's ignorance of the true nature of his disorder, and from bold and lying promises made of a perfect cure.

It is far from my intention to defend the body of surgeons from any accusation which may justly be brought against them; but as the reason given by most of the patrons of quackery for their supporting it, is, that the medical world, through mere obstinacy, never depart from the customs of their ancestors, nor attempt any thing new, though mankind might be much benefited by such inventions; and as I think that such imputation cannot with any colour of justice be made against us, I would beg leave to be indulged a few words on this subject.

That the merit of many of the old practitioners was great; that they left behind them many proofs both of their sagacity and their dexterity; that we have received large information from their writings; and that, *cæteris paribus*, he who is best acquainted with them will be the best surgeon, is well known to every one who is at all conversant with them, and can be denied only by those who are not. But, on the other hand, it must also be allowed, that both their theory and their practice laboured under great disadvantages, which rendered their judgment of many diseases erroneous, and their treatment of them irrational and unsuccessful.

The very imperfect state of their anatomy was one great source of error; which kind of knowledge has

been so cultivated in our times as to convert ignorance into a vice, and to render those who are deficient in it perfectly inexcusable.

As this is the only true and solid basis from which all chirurgical knowledge must for ever spring, so it has of late years been productive of many real and great improvements in the art.

The ancient surgery was coarse, and loaded with a farrago of external applications, some of which were horridly, and yet unnecessarily painful, and others altogether useless; whilst the operative part of the art was encumbered with a multitude of aukward unmanageable instruments, and pieces of machinery.

The practitioners of the present time have brought the practice into a much narrower compass, have rendered it less painful and more intelligible; they have reduced the number of instruments, and by the extreme simplicity of those which they now use, they have considerably assisted the dexterity of an operator, and shortened the time of an operation; they have almost thrown aside the burning cautery, and are much more sparing in the use of caustic applications than their predecessors used to be; they now accomplish many cures by mild and gentle means, which formerly were thought not obtainable but by much severity; to say nothing of the indelible marks which such practice left behind it. The havoc formerly made both of limbs and lives, by the use of long forceps in gun-shot wounds; the explosion of the long-prevailing notion that such wounds were

poisonous; the easy superficial method in which they are now in general treated, and the opportunities which such treatment gives for nature to exert those powers with which the Almighty Author has furnished her, do credit to the modern practitioners; the double incision in amputations; the present method of removing cancerous breasts, and encysted tumours; the lateral operation for the stone in the bladder; the use of the cutting gorget; amputation in the joint of the shoulder; the present method of letting out all the water at once from an ascites; the improvements in the treatment of the fistula lachrymalis; the cure of the vari and valgi, with many others which might be named; in short, the superior neatness, ease, and expedition of the present surgery, when compared to the ancient, are certain and undoubted improvements made by the modern practitioners, and such as mankind are much benefited by, as their pains are thereby lessened, the elegance of their figure preserved, and the time of their confinement shortened; all which will, I presume, be allowed to be advantages, while human nature shall remain sensible of pain, while scars shall be thought deformities, or confinement be deemed irksome.

Nor is our conduct, with regard to the particular disease which makes the subject of the following tract, in the least degree blameable; so far from it, that the treatment which we meet with sometimes is most singularly unjust, we being often severely censured for that from which we ought to derive praise: so

little do we deserve the reflexion cast upon us, of being content with what our fathers taught us, and neither improving the art ourselves, nor encouraging those who do: that, on the contrary, much pains have been taken to improve this particular part of surgery, and the public ought to thank us for not persevering in the use of the old, tedious, painful, and hazardous processes, after we found them to be in general ineffectual.

But though I would at all times vindicate the profession from every unjust attack, I would by no means be supposed to think that there is not large room left for the industry both of us and our successors; some of the operative parts of the art are still capable of improvement, and the treatment of some diseases might certainly be altered for the better.

Whether our future labours shall be crowned with success or not, still I think it will appear to every one at all versed in the history of surgery, that the practitioners of the present time are so far from deserving the character which they who know nothing of the art have given of them, that they really deserve a very contrary one; since, instead of obstinately adhering to the practice of their ancestors, they have differed from it in many instances, where they found they could do it with safety, and to the advantage of mankind; and have endeavoured to advance the utility of their profession, by the only means whereby it is capable of being improved, *viz.* by a sedulous application to anatomy, by the frequent examinations

of dead morbid bodies, and by making such experiments on the living, as they had just reason to think would prove beneficial; candidly acknowledging, at the same time, where they have found their art insufficient, and not persisting in tormenting their fellow-creatures merely for gain.

In the following treatise I have endeavoured to express myself in as plain, explicit, and intelligible a manner as I am able, and the subject will admit; being desirous as much as I can to inform mankind of the true nature of the disease, of the danger they incur, and the frauds they are liable to, from the ignorance of one set of quacks, and the worse qualities of another: to show what the art of surgery in judicious hands is capable of doing, and how essentially the conduct of an impostor differs from that of an honest man, who will never be ashamed of confessing that he can not do what is not in his power.

In the first edition of this book were many faults; some of the press, some of the author: in this some pains have been taken to lessen both. Of typographical errors very few, if any, will, I hope, be found; and wherever it has appeared to me that the matter of the treatise was obscure, erroneous, or deficient, I have altered, corrected, and added to it.

I am still far from thinking that it is perfect or faultless; but on the other hand, I am not conscious of having advanced any thing in it which is not strictly true, and agreeable to the most successful practice. Improvement of the art of surgery, and the relief of

mankind, are my two principal objects; and if what I have now, or at any other time written, shall be found to have contributed toward accomplishing either of those ends, I hope the reader will excuse all those lesser faults,

—— *quas aut incuria fudit,*
Aut humana parum cavit natura.



TREATISE, &c.

SECT. I.

BY the term RUPTURE, DESCENT, or HERNIA, is in general meant a swelling produced by the falling down or protrusion of some part or parts, which ought naturally to be contained within the cavity of the belly.

The places in which these swellings make their appearance, in order to form what is called a RUPTURE, are the groin, the navel, the labia pudendi, the upper and fore part of the thigh, and every point of the anterior part of the abdomen.

The parts, which by being thrust forth from the cavity in which they ought naturally to remain, form these tumors, are a portion of the omentum, a part of the intestinal canal, and sometimes^a (though very rarely) the stomach.

From these two circumstances, of situation and contents, are derived all the different appel-

* The liver, spleen, uterus, bladder, &c. have at different times been found in different herniæ, but these are so rare as not to come within a general description.

lations by which herniæ are distinguished: for example, they are called *inguinal*, *scrotal*, *femoral*, *umbilical*, and *ventral*, as they happen to make their appearance in the groin, scrotum, thigh, navel, or belly. If a portion of intestine only forms it, it is called *enterocele*, *hernia intestinalis*, or gut-rupture; if a piece of omentum only, *epiplocele*, *hernia omentalis*, or caul-rupture; and if both intestine and omentum contribute mutually to the formation of the tumor, it is called *entero-epiplocele*, or compound rupture.

If the piece of gut or caul descends no lower than the groin, it is said to be incomplete, and is called *bubonocèle*; if the scrotum be occupied by either of them, the rupture is said to be complete, and bears the name of *oscheocèle*: the latter used by our forefathers to be attributed to laceration of the peritoneum, the former to its dilatation merely.

The opinion, that the scrotal hernia is occasioned by a forcible division, or breach made in the peritoneum, has always been, and still is, with the unknowing, a very prevailing one, though without any foundation in truth; both the scrotal and femoral pass out from the abdomen by openings which are natural to every human body; as well those who have not ruptures, as those who have. The former, that is the scrotal, descend by means of an aperture in the tendon of the external oblique muscle, near the groin; designed for the passage of the spermatic vessels in men, and the ligamenta uteri in women; and the latter, under the hollow made by Poupert's, or

Fallopian's ligament, at the upper part of the thigh, along with the great crural vein and artery.

The pair of muscles called *obliqui externi ascendentes*, cover all that part of the belly which is without bone, and the lower and anterior parts of the thorax. They are fleshy on the sides, and tendinous in the middle and lower part; they spring from the seventh and eighth ribs, and from all below them, by fleshy portions which indigitate with corresponding parts of two other muscles, called the *serratus major anticus*, and the *latissimus dorsi*, and becoming tendinous, are inserted into what is called the *linea alba*, the spine of the *os ilium*, and into the *os pubis*.

At the lower part of the belly, on each side, a little above the last-mentioned bone, the fibres of the tendon of this muscle separate from each other, and form thereby two apertures, through which pass the spermatic vessels in men, and the ligamenta uteri in women. These openings are of an oval figure, and have an oblique direction from above downward: the upper part of them is rather wider than the lower, and they are of larger size in men than in women^b.

^b A detachment of fibres from the fascia lata of the thigh is generally united with the tendon composing the aperture in the *obliquus externus*, which mixture or connexion of fibres will in some measure account for the pain which they who labour under strangulated ruptures feel upon standing upright, and the relief which bending the thigh upward toward the belly always gives them.

The tendinous fibres of this muscle, as they proceed from its fleshy part obliquely downward, have several small apertures for the passage of vessels and nerves; and at their insertion into the os pubis, they cross one another, and are as it were interwoven, by which means their insertion is strengthened, and their attachment made firmer.

What is called by the particular name of Pott's ligament is really nothing more than the lower border of this tendon, stretched from the fore part of the os ilium, or haunch bone, to the os pubis, and turned or folded inward at its inferior edge.

The other muscles of the belly are the obliquus internus, the transversalis, the rectus, and the pyramidalis, none of which have any concern with our present subject. The spermatic cord does indeed pass under the lower edge or border of the two first of these, but at such a distance, and in such manner, that no action of these muscles can any way affect, or ever make any structure either on it, or on a hernia accompanying it; they have no perforations, or apertures, though so many writers of credit (even late ones) have both described and delineated them; consequently they can have no share in

However incredible and strange it may seem, yet I am convinced, that operations have been performed by the information obtained from books only, without any previous anatomical knowledge, any practice on dead bodies, and surely any, if any, opportunities of seeing such operations performed by others, or the living. How grossly must such an operator be deceived by the account of the rings, if they are

the embarrassment of the parts contained in a hernial sac, nor require any division in that operation, which becomes sometimes necessary towards setting them free: which is a fact of no small consequence to an operator.

The inside of these muscles, and indeed the whole cavity of the belly, is lined with a smooth, firm, but easily dilatable membrane, called the peritoneum, a minute account of which would lead me beside my present purpose, and therefore I shall only observe, that it lines the whole abdomen, and gives an external coat to every viscus contained in it.

Behind the peritoneum lies a loose, cellular membrane, by some called its appendix, which is found in different quantity in different places. In some the cells are empty, and are immediately visible upon being blown into; in other parts it is plentifully stocked with fat, and,

usually though absurdly called, of the abdominal muscles: after he has divided the first, or that of the external oblique, he will expect to find a second in the internal, and a third in the transversalis, and will never suppose that he is got into the cavity of the belly, till he has divided all the three: it is therefore of the utmost consequence that this matter be set right, and that, notwithstanding what has been said on this subject by writers of great eminence, every surgeon be informed that the external oblique muscle is the only one which has any opening in it; that the description given by Mr. Cheselden of these muscles, in the last edition of his anatomy, is erroneous; and all descriptions and all delineations (some of which are to be found even in later writers) of more openings than that single one on each side, are not representations of nature, but are the images of a luxuriant fancy, and have no foundation in truth.

though somewhat varied in its appearance in different places, is found in most parts of the body.

This cellular membrane, void of fat, surrounding the spermatic vessels, as they pass forth from the cavity of the abdomen into the groin, is called the tunica vaginalis of the chord, or tunica communis vasorum spermaticorum; which chord, thus enveloped, passing under the inferior edge or border of the transversalis, and internal oblique muscles, and through the perforations or natural apertures of the external oblique, descends through the groin to the testicle, in such manner, that the spermatic vessels in their passage from the cavity are really and truly behind the peritoneum.

The tunica vaginalis testis is a membrane perfectly distinct from this, forming a particular cavity, which includes the glandular substance of the testicle, and has nothing to do with a common rupture. In every fœtus, until, or very near until the time of birth, there is an open and free communication between the cavity of this last tunic, and that of the belly, for the passage of the testicle from the abdomen into the scrotum: soon after birth this passage closes and becomes impervious; nor is there ever after the time of such closing, any communication between the cavity of the belly, and that of the tunica vaginalis testis. But though the passage remains in general for ever shut, yet the place where its orifice, or mouth, was, may always be known by a kind of cicatricula, much like to what appears

within the abdomen, opposite to the navel, or place where the umbilical vessels of the fœtus passed to and from the placenta; at the place of which cicatrix, the peritoneum is generally weaker than elsewhere. Now, if it be remembered, that this weak part is necessarily opposite to the natural opening in the tendon of the external oblique muscle; that neither the internal oblique muscle, nor the transversalis, come low enough to make any resistance to whatever shall press against this part; and that the acknowledged use of the muscles of the abdomen is by pressing on all its contained viscera to assist digestion, the expulsion of the fæces, urine, and fœtus; (and that in many natural actions, such as sneezing and coughing, &c. and in all great exertions of strength and force, our erect posture must necessarily occasion a pressure to be made against the lower part of the inside of the belly, by some of its contents); a very probable and satisfactory account of the origin of the common inguinal and scrotal hernia may be collected.

In young children, this descent or protrusion happens most frequently when the child strains in crying, or in expelling its fæces: as soon as the effort ceases, and the child is quiet, the part generally returns up again, and the swelling disappears. The nurses call it wind, and it is at first most frequently neglected, as the child is not apparently injured by it, and few people are sufficiently aware of its possible consequences.

Not that the disease is by any means confined

to children; adults frequently are attacked by it, either by falls, strains, great exertions of strength, difficulty of expelling hard fæces, or a general laxity of frame.

Whether the rupture be inguinal, scrotal, or femoral, and whether it consists of intestine, or omentum, or both, the protruded part must carry before it a part of the membrane which lines all the internal surface of the abdominal muscles, or rather the whole cavity of the abdomen, and is called peritoneum. This portion of the peritoneum, including the piece of gut or caul, is known by the name of the *hernial sac*, and is larger, or smaller, according to the quantity of intestine, or omentum, contained in it: it is at first small and thin, and in ruptures which are not of the congenial kind, seldom comes lower than the groin^d at first, but by repeated descents it extends itself lower and lower, till it gets quite into the scrotum, and still as it is extended in length, it becomes thicker and firmer in texture, till in old age, or old ruptures, it is found of very considerable thickness.

As all parts of the peritoneum are of a very extensible, dilatable nature, and as the hernial sac has this property in common with many other

^d I will not say positively that all those ruptures which appear in the scrotum of very young children are congenial (that is, have the tunica vaginalis testis for their hernial sac), but all those which I have had an opportunity of examining have proved so; and I believe it would be no erroneous criterion, whereby to distinguish the common rupture from the congenial, in infants.

parts of the body, of thickening as it extends, it does in some cases stretch to a very considerable size, and contain such a quantity of intestine and omentum as is almost incredible. This circumstance of its becoming thicker as it is more extended, is perhaps the reason why some people, and among them the late Mr. Cheselden, have been of opinion that the sac of a hernia was not an elongation of the peritoneum, but produced like that of an aneurism, and some other tumors, by mere pressure of the common cellular membrane; an opinion, which is manifestly and demonstrably erroneous.

Whether the hernial sac in its infant state, while it is very thin, and may possibly have contracted no adhesion to the cellular membrane composing the tunica communis of the spermatic vessels, does ever return back into the belly again, I will not take upon me to determine absolutely; but am much inclined to think it does not, as well from the facility with which the gut or caul most commonly descend after they have been down a few times, as from a fulness which is always to be perceived in the spermatic process of such people as have ever been ruptured. Some few of these I have had opportunities of opening after death, and have always found the sac, either in the groin or scrotum (plainly a continuation of the peritoneum), remaining firmly attached to, and connected with, the tunica communis: nor did I ever see, either in the dead or the living, any reason or authority for the supposition, that it is

capable of returning back into the abdomen after it has been fairly pushed out through the aperture in the tendon^c.

I intentionally avoid saying any thing about the old doctrine of the difference between dilatation and laceration of the peritoneum, it being now generally known and acknowledged, that to whatever size the hernial sac may be extended, and however large its contents may be, it is merely dilated, and hardly ever burst or broken: the particular kind of case, which a few years ago gave rise to a sort of renewal of the old doctrine of ruptures by the laceration of the hernial sac, *viz.* that kind of hernia in which the gut and testicle are found in the same bag, and in immediate contact with each other, being now sufficiently known and explained. See Sect. X. of this Tract.

^c This is a circumstance of some importance in the general treatment of ruptures. Upon it depends the truth or falsehood of the late doctrine of the possibility of returning the intestine included in the hernial sac, and confined by such a stricture of the sac itself, as may prove fatal after the gut is fairly got into the abdomen again. A case, of which more than one instance has been given to us, but in which I am much inclined to believe that some mistake has been made, and which I also think may be accounted for in another and more satisfactory manner. Upon this also depends the practicability or impracticability of returning a strangulated piece of gut back into the belly, after having divided the stricture made by the tendon, without opening the hernial sac, and consequently the propriety or impropriety of making such attempt. All endeavours to do what is impracticable, being in cases of importance much worse than doing nothing.

The signs, or marks, of a common inguinal or scrotal rupture, are in general a swelling in the upper part of the scrotum, or in the groin, beginning at the opening in the abdominal muscles where the spermatic vessels pass down from the belly; which tumor has a different appearance, and different feel, according to the nature of its contents, and to the state and quantity of them.

If a portion of intestine forms it, and that portion be small, the tumor is small in proportion; but though small, yet if the gut be distended with wind, inflamed, or have any degree of stricture made on it, it will be tense, resist the impression of the finger, and give pain upon being handled. On the contrary, if there be no stricture made by the tendon, and the intestine suffers no degree of inflammation, let the prolapsed piece be of what length it may, and the tumor of whatever size, yet the tension will be little, and no pain will attend the handling it: upon the patient's coughing, it will feel as if it was blown into, and in general it will be found very easily returnable.

If the hernia be of the omental kind, the tumor has a more flabby and a more unequal feel: it is in general perfectly indolent, is more compressible, gives the scrotum a more oblong and less round figure, than it bears in an intestinal hernia; and if the quantity be large, and

the patient adult, it is in some measure distinguishable by its greater weight.

If it consists of both intestine and omentum, the characteristic marks will be less clear than in either of the simple cases, but yet will to any body who is accustomed to these diseases be sufficiently so, to enable them to distinguish it from any other complaint.

The only diseases with which a true hernia can be confounded, are the *venereal bubo*, the *hydrocele*, and that defluxion on the testicle, called *hernia humoralis*; from each of which it is certainly very distinguishable.

The circumscribed incompressible hardness, the situation of the tumor, and its being free from all connexion with the spermatic process, will sufficiently point out the first, at least while it is in a recent state; and when it is in any degree suppurated, he must have a very small share of the *tactus eruditus*, who cannot feel the difference between matter, and either a piece of intestine or omentum.

The perfect equality of the whole tumor, the freedom and smallness of the spermatic process above it, the power of feeling the spermatic vessels, and the *vas deferens* in that process, its being void of pain upon being handled, the fluctuation of the water, the gradual formation of the swelling, its having begun below and proceeded upwards, its not being affected by any posture or action of the patient, nor increased by his coughing or sneezing, together with the absolute impossibility of feeling the testicle at

the bottom of the scrotum^f, will always, to any intelligent person, prove the disease to be a *hydrocele* of the *tunica vaginalis testis*. And in the *hernia humoralis*, the pain in the testicle, its enlargement, the hardened state of the epididymis, and the exemption of the spermatic chord from all unnatural fulness, are such marks as cannot easily be mistaken; not to mention the generally preceding gonorrhea. But if any doubt still remains of the true nature of the disease, the progress of it from above downward, its different state and size in different postures, particularly lying and standing, together with its descent and ascent, will, if duly attended to, put it out of all doubt, that the tumor is a *true hernia*.

If an attempt be made for the reduction of the rupture, and it consisted of a piece of intestine, it generally slips up all at once. In its return it makes a kind of guggling noise; and when it is

^f By this remark it may possibly be thought that I mean to say, that the testicle is always to be felt at the bottom of the scrotum in a true hernia; which in general is true, but not without some exceptions. In recent ruptures, of the common kind, whether of the gut or caul, while the hernial sac is thin, has not been long or very much distended, and the scrotum still preserves a regularity of figure, the testicle may almost always be easily felt at the inferior and posterior part of the tumor: but in old ruptures, which have been long down, in which the quantity of contents is large, the sac considerably thickened, and the scrotum of an irregular figure, it often happens that the testicle is not to be felt, neither is it in general easily felt in a *congenital hernia*, for very obvious reasons.

up, the scrotum and process will be found free from any preternatural fulness. If a portion of omentum formed it, it retires more gradually, without any of the noise of the former, and requires to be followed by the finger to the last. If both gut and caul contributed to the formation of it, the gut generally goes up first, and leaves a flabby irregular kind of body behind it, which still possesses the process or scrotum, according as the disease was bubonocoele, or oscheocoele, and requiring still farther compression, at last ascends.

The intestine said to be most frequently found in a scrotal hernia, is the ileum, though it is also allowed that the cæcum and part of the colon have been met with.

This is one of the many maxims which writer receives from writer, and inattentive readers all believe.

That a portion of the ileum does often descend in a hernial sac is beyond all doubt; but that the descent, or more properly protrusion, of a part of the cæcum and colon is rare, is not true, for it happens very frequently. Perhaps it would not bear to be established as a general rule; but from what has fallen within my observation, in frequently performing the operation for a strangulated rupture, it has appeared to me, that the greater number of those in whom it has become necessary (all attempts to reduce the parts by hand having proved fruitless), have consisted of the cæcum with its appendicula, and a portion of the colon. Nor will the size, disposition, and

irregular figure of this part of the intestinal canal, appear upon due consideration a very improbable cause of the difficulty or impossibility of reduction by the hand only.

I have already mentioned the principal circumstances by which hernias are distinguishable from other diseases. But it is also to be observed, that the same kind of rupture in different people, and under different circumstances, wears a very various face; the age and constitution of the subject, the date of the disease, its being free or not free from stricture or inflammation, the symptoms which attend it, and the probability or improbability of its being returnable, necessarily producing much variety: the degree of hazard attending this complaint will be also more or less as it shall happen to be circumstanced.

If the subject be an infant, the case is not often attended with much difficulty or hazard; the softness and ductility of their fibres generally rendering the reduction easy as well as the descent; and though from neglect or inattention it may fall down again, yet it is as easily replaced, and seldom produces any mischief: I say seldom, because I have seen an infant, one year old, die of a strangulated hernia, which had not been down two days, with all the symptoms of mortified intestines.

If the patient be adult, and in the vigour of life, the consequences of neglect, or of maltreatment, are more to be feared than at any other time, for reasons too obvious to need

relating. The great and principal mischief to be apprehended in an intestinal hernia, is an inflammation of the gut, and an obstruction to the passage of the aliment, and fæces through it; which inflammation and obstruction are generally produced by a stricture made on the intestine, by the borders of the aperture in the tendon of the abdominal muscle, through which the hernia and its sac pass. Now it must be obvious, that the greater the natural strength of the subject is in general, and the more liable to inflammation, the greater probability there must be of stricture, and the more mischief likely to ensue from it. In very old people, the symptoms do not usually make such rapid progress, both on account of the laxity of their frame, and their more languid circulation; and also that their ruptures are most frequently of ancient date, and the passage considerably dilated; but then, on the other hand, it should also be remembered that they are by no means exempt from inflammatory symptoms; and that if such should come on, the infirmity of old age is no favourable circumstance in the treatment which may become necessary.

If the disease be recent, and the patient young, immediate reduction, and constant care to prevent its pushing out again, are the only means whereby it is possible to obtain a perfect cure.

If the disease be of long standing, has been neglected, or suffered to be frequently down, and has given little or no trouble, the aperture in the abdominal muscle, and the neck of the hernial sac, may both be presumed to be large; which

circumstances in general render immediate reduction less necessary and less difficult, and also frustrate all rational expectation of a perfect cure. On the contrary, if the rupture be recent, or though old has generally been kept up, its immediate reduction is more absolutely necessary, as the risk of stricture is greater from the supposed smallness of the aperture, and narrowness of the neck of the sac. If the rupture be very large and ancient, the patient far advanced in life, the intestine not bound by any degree of stricture, but does its office in the scrotum regularly, and no other inconvenience be found to attend it, but what proceeds from its weight, it will in general be better not to attempt reduction, as it will in these circumstances most probably prove fruitless, and the handling of the parts in the attempt may so bruise and injure them as to do mischief: but this must be understood to be spoken, of those only in which there is not the smallest degree of stricture, nor any symptom of the obstruction in the intestine; such circumstances making reduction necessary at all times, and in every case.

With regard to the contents of a hernia, if it be a portion of omentum only, and has been gradually formed, it seldom occasions any bad symptoms, though its weight will sometimes render it very troublesome. But if it be produced suddenly by effort or violence, that is, if a considerable piece of the caul by accident slip down at once, it will sometimes prove painful, and cause very disagreeable complaints; the con-

nexion between the omentum, stomach, duodenum, &c. being such as to render the sudden descent of a large piece of the first sometimes productive of nausea, vomiting, colic, and all the disagreeable symptoms arising from the derangement of these viscera. When the piece of caul is engaged in such a degree of stricture as to prevent the circulation of blood through it, it will sometimes, by becoming gangrenous, be the occasion of very bad symptoms, and even of death, as I have more than once seen: and thus, as a mere omental hernia, it may sometimes be subject to great hazard. But even though it should never be liable to the just-mentioned evil, that is, though the portion of the caul should remain uninjured in the scrotum, yet it renders the patient constantly liable to hazard from another quarter: it makes it every moment possible for a piece of intestine to slip into the same sac, and thereby add to the case all the trouble and all the danger arising from an intestinal rupture. It is by no means an uncommon thing for a piece of gut to be added to a rupture, which had for many years been merely omental, and for that piece to be strangulated, and require immediate help.

An old omental hernia is often rendered not reducible, more by an alteration made in the state of the prolapsed piece of caul, than by its quantity. It is very common for that part of the omentum which passes through the neck of the sac to be compressed into a hard, smooth body, and lose all appearance of caul, while what is

below in the scrotum is loose and expanded, and enjoys its natural texture. In this case reduction is often impossible, from the mere figure of the part; and I have so often seen this, both in the living and the dead, that I am satisfied, that for one omental rupture rendered irreducible by adhesions, many more become so from the cause above mentioned.

In the sac of old omental ruptures that have been long down, and only suspended by a bag truss, it is no very uncommon thing to have a pretty considerable quantity of fluid collected: this, in different states and circumstances of the disease, is of different colour and consistence, and seldom so much in quantity as to occasion any particular attention to it; but on the other hand, it sometimes is so much in quantity as to become an additional disease to the original one. I have more than once been obliged to let it out, in order to remove the inconvenience arising from its weight, and the distention of the scrotum, which I have also seen become gangrenous by the neglect of this operation.

If the hernia be of the intestinal kind merely, and the portion of gut be small, the risk is greater, strangulation being more likely to happen in this case, and more productive of mischief, when it has happened: for the smaller the portion of gut is which is engaged, the tighter the tendon binds, and the more hazardous is the consequence. I have seen a fatal gangrene, in a bubonocoele, which had not been formed forty-eight hours, and in which the piece of intestine

was little more than half an inch. There are few practitioners who have seen business, but know the truth of this; but perhaps the reason of it is not sufficiently explained to the unknowing. It is this: when a considerable portion of intestine passes out from the belly in a hernial sac, it necessarily and unavoidably carries with it a proportional quantity of the mesentery, which every body knows is a strong double membrane. When the prolapsed part is at all considerable, this double membrane is again in some measure folded on itself, and takes off a good deal of the effect of the stricture on the intestine. Now although this circumstance will not prevent the effect, if the means of relief be totally neglected, yet it will most certainly retard the evil, and give more time for assistance; whereas, when there is little or none of the mesentery got through the tendon, and the thin, tender intestine bears all the force of the stricture, it is immediately brought into hazard.

The practical inference to be drawn from hence is too obvious to need mentioning.

In the intestinal, as in the omental hernia, they which have been often or long down, are in general more easily returned, and do not require such immediate assistance, as they which have seldom been down, or have recently descended; and in the one kind of hernia as well as the other, the state of the hernial sac with regard to size, thickness, &c. depends very much on the date of the disease, and the regard that has been paid to it.

If the hernia be caused by a portion of the intestine ileum only, it is in general more easily reducible than if a part of the colon has descended with it, which will also require more address and more patience in the attempt. The reduction of a mere intestinal hernia too, *cæteris paribus*, will always remain more practicable than that of a mere omental one, after it has attained to a certain size and state, as the part contained within the former is liable to less alteration of form than that within the latter; which alteration has already been mentioned as no infrequent hindrance of the return of an old caul rupture.

Not that the parts within a mere intestinal hernia are absolutely exempt from such an alteration as may render their return into the belly impracticable, even where there is no stricture: for I have seen that part of the mesentery, which has lain long in the neck of the sac of an old rupture, so considerably hardened and thickened, as to prove an insuperable obstacle to its reduction.

Upon the whole, every thing considered, I think it may be said, that an intestinal rupture is subject to worse symptoms, and a greater degree of hazard than an omental one, though the latter is by no means so void of either as it is commonly supposed to be; that bad symptoms are more likely to attend a recent rupture than one of ancient date; that the descent of a very small piece of intestine is more hazardous than that of a larger; that the hernia, which consists of gut only, is in general attended with worse

a cure, which he knows he has not. Of this I could produce many instances, and some of those among people of such rank, as one would expect should set them above such disingenuousness.

I have already said, that to replace the prolapsed body, or bodies, within the cavity of the belly, and to prevent their falling out again, by means of a proper bandage, is all that the art of surgery is capable of doing in this disease: and what I said was strictly true. But it must also be remembered, that nature, according to the age of the patient, the date of the disease, the kind of rupture, and some other circumstances, is often capable (when properly assisted, and not obstructed) of doing more, and of confirming that as a perfect cure in some, which in others she leaves imperfect, and constantly requiring the assistance of art: for when the portion of gut or caul, or whatever formed the tumor, is perfectly and properly replaced in the belly, and an opportunity thereby given to the aperture in the tendon to contract itself, and for a proper bandage to bring the sides of the entrance of the hernial sac as near together as it will admit, the surgeon has really done his part. What remains is that of nature: and whether she will be capable of so contracting the part, as to prevent a future descent or not, is matter of great uncertainty: it is a circumstance which art has very little power of assisting, and which can be known only from the event.

On the contrary, all the pretensions which

have at different times been made to remedies, indued with the capacity of healing and consolidating the parts supposed to be broken or torn, or of constringing such as are dilated, have all proved inefficacious and delusive, to say the best of them: the parts concerned in this disease, and which ought to be affected by the operation of such remedies, are absolutely out of the reach of any applications or medicines whatever: the relief which some people have found while under such processes, has been from the long rest which they have been subjected to, or from the strict bandage which has been put upon them: either of which will in some cases do a great deal; while the remedies which are either applied or taken, are made use of merely to deceive, and never had, or can have, any share in the real cure of a rupture.

By what has been said, I must beg not to be understood to mean, that when the gut or caul have been once replaced, the patient can receive no farther benefit from chirurgical assistance; nor that every rupture in persons of mature age is incapable of perfect cure: this is far from my meaning, and far from truth. There are many circumstances attending ruptures, which will require frequent assistance in order to render a cure more probable; and there are many ruptures in persons of mature age, which will admit of perfect cure, if properly and judiciously managed from the first.

I only mean to contradict that positive assertion which all rupture-quacks make use of, and

which too many of mankind believe, *viz.* that there are medicines and applications which are specific in the cure of this disease, and that they (such quacks) are possessed of them; both which are absolutely false.

As this is a matter of some importance to mankind, and may possibly be rendered still more intelligible by a few words, I beg leave to be indulged in them.

The general doctrine is, that the ruptures of infants, and of very young children, frequently admit of a perfect cure; those of adults less frequently; and those of old people seldom or never; all which, with certain limitations, is true.

The great and material difference between these consists in the state of the hernial sac, and that of the aperture in the abdominal tendon through which it passes.

The sac of a hernia has already been described as being an elongation or process of the peritoneum, or general lining of the cavity of the belly, thrust down before the body constituting the swelling; which body is enveloped in it as in a bag, somewhat resembling what is vulgarly called a thumb-stall, or the finger of a glove cut off. While the hernia is recent, this bag is thin and fine, like the rest of the membrane of which it is a portion; and being of a very dilatable nature, is easily enlarged, according to the quantity of contents which insinuate themselves into it: like some other parts of the body, it increases in thickness and toughness as it in-

creases in capacity; and as it seldom if ever returns back into the belly, after it has once passed out from it, it is by the repeated descents of a portion of gut or caul into it, gradually enlarged in size, and consequently in thickness; insomuch, that in old ruptures that have been neglected, or deemed irreducible, or been suffered to remain long, or always down, it generally acquires a very considerable degree of toughness, thickness, and hardness. In those ruptures which are not of the congenial kind, at first it gets no lower than the groin, and while it remains there is generally small and thin; but by frequent protrusions of the intestine or omentum, it is pushed by degrees into the scrotum, and then most frequently acquires a pyriform kind of figure, having its broader part in the scrotum, and its narrow one, or neck, in the groin.

In infants, in very young subjects, and in recent cases, this sac, from its soft thin state, is capable of having its upper part or neck so compressed by means of a bandage, as either to procure an union of the sides with each other, or at least so to lessen the diameter of its passage as to prevent the descent of any thing into it from the belly: this produces what is commonly called a perfect cure.

In those of mature age, or whose ruptures are of some standing, the entrance into the sac is generally large, in proportion to the size and age of the patient, and thicker and firmer than in the former state, for reasons just given: in these,

therefore, the closing or compression of its neck, enough to hinder the falling down of any thing from the abdomen, is more difficult to accomplish, and more unlikely to succeed. In very ancient people, or very old ruptures, success is still more improbable, for the same reasons.

A bandage therefore, or truss, though it is the only remedy at all ages, and in all states of reducible ruptures, yet acts in a different manner, and is capable of producing very different effects, according to the circumstances of the cases in which it is applied: in very young persons, a radical cure is frequently the consequence; in the middle-aged it often gives the tendon and mouth of the sac such opportunity of being contracted, as to produce nearly the same event; but as it only serves by the mere pressure of the pad to keep the parts in their proper place, in very old people it can hardly ever be laid aside, without hazard of a new descent, which, while it is worn properly, it will almost always prevent.

From the foregoing short account, the following facts may, I think, be collected:—

1. That the principal circumstances attending a rupture must be subject to great variety, according to the age and constitution of the patient, the date of the disease, &c. and consequently that the precise case, and age, in which a radical or perfect cure is obtainable or not, is not easy to be determined, though a judicious man will most commonly know when it is very improbable.

2. That recent ruptures, if immediately and properly taken care of, are capable of a perfect cure at almost any age.

3. That though the thickness of the hernial sac, and the largeness of the abdominal aperture, are generally mentioned as the two causes why old ruptures do not admit of a cure, yet in fact the latter is only a consequence of the former.

4. That all external applications in the attempt toward the cure of a rupture, must, if they are used with any design at all, be intended either to constrict the aperture through which the parts have descended, or to lessen or contract the diameter of the neck of the hernial sac.

5. That the construction of the tendinous aperture (supposing such medicines could penetrate to it), is impossible while it continues dilated, by an old, thick, tough hernial sac, which sac, from the connexions it always has with the cellular membrane of the spermatic chord, can never be returned into the belly; and therefore,

6. That such medicines can be serviceable no other way than by rendering that sac again thin, fine, and compressible; which, from the nature of things and from all experience, is absolutely impracticable,

SECT. II.

THE different treatment which ruptures may require, being dependent on different circum-

stances attending the disease, I shall for the better information of the inexperienced reader divide them into four classes; under which, I think, may be comprehended not only all the kinds of hernias, but every particularity also with which they may happen to be distinguished.

1. Under the first, I reckon those which are capable of easy and immediate reduction, and are not attended by any troublesome or bad symptoms.

2. Under the second, those which have been so long down, that the contained parts are either so altered in form, or have contracted such adhesions and connexions, as to be absolutely incapable of being reduced at all.

3. Under the third, I comprehend those in which such stricture has been made on the protruded parts, as to bring on pain, and produce such an obstruction in the intestinal canal, as to render immediate reduction necessary, but at the same time difficult.

4. And under the fourth, I shall place those in which the return of the parts by the mere hand is absolutely impracticable, and in which the patient's life can be saved only by a surgical operation.

The first is very frequently met with in infants, and sometimes in adults, and is too often neglected in both. In the former, as the descent seldom happens but when the infant strains to cry, and the gut is either easily put up, or returns, *sua sponte*, as soon as the child becomes quiet; it

often is either totally unattended to, or an attempt made to restrain it only by a bandage made of cloth or dimity, and which being ineffectual for such purpose, lays the foundation for future trouble and mischief.

This is in great measure owing to a common opinion, that a young infant cannot wear a steel truss; a generally prevailing error, and which ought to be corrected. There is no age at which such truss may not be worn, or ought not to be applied; it is, when well made, and properly put on, not only perfectly safe and easy, but the only kind of bandage that can be depended upon; and as a radical cure depends greatly on the thinness of the hernial sac, and its being capable of being so compressed as possibly to unite, and thereby entirely close the passage from the belly, it must therefore appear to every one who will give himself the trouble of thinking on the subject, that the fewer times the parts have made a descent, and the smaller and finer the elongation of the peritoneum is, the greater the probability of such cure must be.

The same method of acting must for the same reasons be good in every age in which a radical cure may reasonably be expected; that is, the prolapsed parts cannot be too soon returned, nor too carefully prevented from falling down again, every new descent rendering a cure both more distant and more uncertain.

As soon as the parts are returned, the truss should be immediately put on, and worn without remission, care being taken, especially if

the patient be an infant, to keep the parts on which it presses constantly washed, to prevent galling^s.

It can hardly be necessary to say that the surgeon should be careful to see that the truss fits, as his success and reputation depend on such care. A truss which does not press enough is worse than none at all, as it occasions loss of time, and deceives the patient or his friends; and one which presses too much, or on an improper part, gives pain and trouble, by producing an inflammation and swelling of the spermatic chord, and sometimes of the testicle.

In adults, whose ruptures are of long standing, and accustomed to frequent descent, the hernial sac is generally firm and thick, and the aperture

^s As the constant and unremitted wearing a truss, to some people is irksome and inconvenient, it may not be improper to remark that Mr. Pott did not intend by the expression "*worn without remission*," that the truss is always to be worn, by night as well as by day; he generally allowed it to be taken off when in bed, as a recumbent posture, in most cases, is sufficient security against the reprotrusion of the intestine or omentum; but the truss should be carefully re-applied in the morning, while the person is in the same horizontal position, and either he, or she, should be particularly observant to put it on when under the necessity of going to stool in the night. If the patient be subject to fits of coughing, common sense dictates that at those times it ought not to be laid aside.—Children are so subject to violent exertions from crying and other causes, that their trusses cannot often be safely left off; but when they are well and quiet, and in bed, the pressure may now and then be judiciously dispensed with, and the removal of it, though but for short intervals, affords them great ease and relief.

in the tendon of the abdominal muscle large; the freedom and ease with which the parts return into the belly, when the patient is in a supine posture, and the little pain which attends a rupture of this kind, often render the persons who labour under it careless: but all such should be informed, that they are in constant danger of such alteration in their complaint, as may put them into great hazard, and perhaps destroy them. The passage from the belly being open, the quantity of intestine in the hernial sac is always liable to be increased, and, when down, to be bound by a stricture. An inflammation of that portion of the gut which is down, or such obstruction in it as may distend and enlarge it, may at all times produce such complaints as may put the life of the patient into imminent danger; and therefore, notwithstanding this kind of hernia may have been borne for a great length of time, without having proved either troublesome or hazardous, yet as it is always possible to become so, and that very suddenly, it can never be prudent or safe to neglect it.

Even though the rupture should be of the omental kind (which considered abstractedly is not subject to that degree or kind of danger to which the intestinal is liable), yet it may be secondarily, or by accident, the cause of all the same mischief; for while it keeps the mouth of the hernial sac open, it renders the descent of a piece of intestine always possible, and consequently always likely to produce the mischief which may proceed from thence.

They who labour under a hernia thus circumstanced, that is, whose ruptures have been generally down while they have been in an erect posture, and which have either gone up of themselves, or have been easily put up in a supine one, should be particularly careful to have their truss well made, and properly fitted; for the mouth of the sac, and the opening in the tendon, being both large and lax, and the parts having been used to descend through them, if the pad of the truss be not placed right, and there be not a due degree of elasticity in the spring, a piece of intestine will, in some posture, slip down behind it, and render the truss productive of that very kind of mischief which it ought to prevent.

It is scarcely credible how very small an opening will serve for a portion of gut or caul to insinuate themselves into at some times. Now, though in persons of mature age it most frequently proves impracticable so to compress the mouth of the hernial sac, as absolutely to close it, yet by the constant use of a well-made truss, it may be so lessened, as to render the descent of a piece of intestine into it much more difficult: from whence we may learn the great consequence of having the part completely reduced before the truss is applied, and the danger that may be incurred by laying such bandage aside after it has been worn some time; since the same alteration which renders the descent of the gut less easy, will also make the reduction more difficult, if a piece should happen to get down:

and hence also we may learn why the bandage should be long and unremittingly worn by all those whose time of life makes the expectations of a perfect cure reasonable, many of the ruptures of adults being owing to the negligent manner in which children at school are suffered to wear their trusses.

I know a gentleman who has for some years had an omental rupture, which was neglected while he was young, and he having naturally a lax habit, and the abdominal opening being much dilated, he finds it extremely difficult to keep it up, even with the best truss he can get, behind which it will sometimes slip down: when this happens, it gives him such immediate and acute pain at his stomach, and makes him so intolerably sick, that he is obliged immediately to throw himself on his back, and procure the return of the piece of omentum.

SECT. III.

IN the second class I ranked those cases in which the parts constituting the hernia are found irreducible, but not in a state of inflammation, nor producing any troublesome or dangerous kind of symptoms.

This incapacity of reduction may be owing to several causes, but most frequently arises either from the largeness of the quantity of the contents, from an alteration made in their form and texture, or from connexions and adhesions

which they have contracted with each other, or with their containing bag.

I have already mentioned it as my opinion that ruptures are sometimes rendered difficult to be reduced, by that portion of the intestinal canal which is called the cæcum, or the beginning of the colon, being contained in the hernial sac. Of which fact I am as much convinced as the nature of such kind of things will permit; that is, by observations made both on the living and the dead.

When a hernia of this kind (*viz.* one containing such a part of the intestinal tube) has been long neglected, and suffered to remain in the scrotum without any bandage at all to support its weight, the hernial sac being constantly dragged down, and kept in a state of distention, necessarily becomes thick, hard, and tough; by this means the diameter of its neck is lessened, and the return of the intestine back from the scrotum into the belly rendered more and more difficult, as the parts through which it is to pass become harder, and less capable of yielding. This will, indeed, in time prove an obstruction sufficient to hinder any part of the intestine, or even of the omentum, from being returned: but the more the difficulty is, which proceeds from the mere figure and size of the portion of gut, the greater will be the obstruction when added to that arising from the just-mentioned cause.

An alteration produced by time, and constant, though gentle, pressure in the form and consist-

ence, or texture of the omentum, is also no infrequent cause, why neglected omental ruptures become irreducible.

The cellular membrane in all parts of the body, however loose and light its natural texture may be, is capable of becoming hard, firm, and compact, by constant pressure. Of this there are so many, and so well-known instances, that it is quite unnecessary to produce any.

The omentum, from its texture, is liable to the same consequence. When a portion of it has been suffered to remain for a great length of time in the scrotum, without having ever been returned into the belly, it often happens, that although that part of it which is in the lower part of the hernial preserves its natural soft, adipose, expansile state, yet all that part which passes through what is called the neck of the sac, is, by constant pressure, formed into a hard, firm, incompressible, carnosus kind of body, incapable of being expanded, and taking the form of the passage in which it is confined, exactly filling that passage, and rendering it impossible to push up the loose part which fills the scrotum.

This is no theoretic opinion, but a fact which I have seen and proved often; and whoever will reflect on it, will immediately find in it one insuperable objection to the return of some old omental ruptures.

The same reason for incapacity of reduction is also sometimes met with in ruptures of the intestinal kind, from an alteration produced on that part of the mesentery which has been suffered to

lie quiet for a great length of time in the neck of an old hernial sac.

The other impediment, which I mentioned, to the return of old ruptures, is connexion and adhesion of the parts, either with each other, or with the bag containing them. This is common to both the intestinal and omental hernia, and is produced by slight inflammations of the parts, which have been permitted to lie long in contact with each other, or perhaps in many cases from the mere contact only. These adhesions are more or less firm in different cases, but even the slightest will almost always be found an invincible objection to the reduction of the adherent parts, by the hand only.

Many, or perhaps most of these irreducible ruptures become so by mere time and neglect, and might at first have been returned: but when they are got into this state, they are capable of no relief from surgery but the application of a suspensory bag, to take off or lessen the ^hinconvenience arising from the weight of the scrotum.

^h I am not unaware that most of these are capable of being cured by the operation for the bubonocoele, as it is called; but as I should never think of proposing it in any case in which there are not symptoms that threaten the life of the patient, so I have not mentioned it in this place as a means of cure. I also am not unapprised what influence a successful operation or two of this sort has had on the unknowing: but I also know that such accidental successes have emboldened the same operators to commit more than one or two murders, in similar cases; and that, from the prevalence of fashion, some of these rupture-doctors have been largely rewarded, when they ought to have been hanged.

People in this situation should be particularly careful not to make any attempts beyond their strength, nor aim at feats of agility : they should take care to suspend the loaded scrotum, and to keep it out of the way of all harm from pressure, bruise, &c. When the tumor is very large, a soft quilted bolster should be worn at the bottom of the suspensory to prevent excoriation, and the scrotum should be frequently washed for the same reason; a loss of skin in this part, and in such circumstances, being sometimes of the utmost importance. They ought also to be particularly attentive to the office of the intestinal canal, to see that they do not by any irregularity of diet disorder it, and keep themselves from being costive, for reasons too obvious to need relating. By these means, and with these cautions, many people have passed their lives for many years free from disease or complaint, with very large irreducible ruptures.

On the other hand, it is fit that mankind should be apprised that the quiet, inoffensive state of this kind of hernia is by no means to be depended upon; many things may happen to it, by which it may be so altered, as to become hazardous, and even fatal: an inflammation of that part of the gut which is down, any obstruction to the passage of the aliment or fæces through it, a stricture made by the abdominal tendon, either on what has been long down, or on a new portion which may at any time be added to it, are always capable of so altering

the state of the case, as to put the life of the patient into danger.

Indeed, the hazard arising from a stricture made on a piece of intestine contained in the sac of an old irreducible hernia, is in one respect greater than that attending one that has been found at times reducible; since from the nature of the case it will hardly admit of any attempt toward relief but the operation, and that in these circumstances must necessarily be accompanied with additional difficultyⁱ.

ⁱ I was some time ago desired to be present at the opening of the dead body of a man who had for many years laboured under a large irreducible hernia, but which had never given him any trouble than what proceeded from its weight, and who died very old: my then state of health would not permit me to go, but I desired leave to send a very ingenious young gentleman, Mr. Price, who was then my pupil at St. Bartholomew's, and is now settled in Wales. The following is the account he gave me:—

“ The hernia was of fourteen years standing, during which
“ time no attempt had ever been made for its reduction; it
“ was on the right side, and distended the scrotum to such a
“ size, that it measured, from the opening in the abdominal
“ muscle, to the bottom of the tumor, fourteen inches and an
“ half, and round the tumor twenty-two inches; the ring, as
“ it is called, was very large, and had no appearance of
“ stricture; the sac was not so thick as might have been
“ expected, and contained no water; the jejunum ileum, the
“ sac of the colon, called the cæcum, with its appendicula
“ vermiformis, together with a large portion of omentum,
“ were the contents; the duodenum was so displaced by the
“ weight of the rest of the guts within the sac, that its
“ direction from the pylorus was perpendicular; the caul
“ adhered to the hernial sac in several places, the intestine in

Among the ruptures which have been thought not reducible, and treated as such, there have been some, which upon more judicious and more patient attempts have been found capable of reduction.

When this is suspected to be the case, the proper method is by absolute rest, in a supine posture, for a considerable length of time, by great abstinence, and the use of evacuants, so to lessen the size of the parts in the hernial sac as to render them capable of passing back again into the belly.

This method has now and then succeeded, and in some cases is worth the trying; but, previous to the attempt, there should be some circumstance which makes success probable; and there should also be good reason to believe, that the habit and age of the patient will bear the necessary confinement and evacuation; otherwise, even though he should get rid of his rupture, he may be much worsted by the experiment^k.

If such attempt succeeds, a truss should be immediately put on, and worn constantly, with-

“ none; the testicle, included in its tunica vaginalis, was
“ much wasted; the spermatic artery and vein ran down
“ behind the hernial sac, but the vas deferens ran up on the
“ inner and left side of it, at a great distance from them,
“ through the whole of its course; but nevertheless would not
“ have been in the way of the operation had it been neces-
“ sary.”

^k Hildanus gives an account of a man radically cured by six months' confinement to bed, in the case of a rupture of twenty years date.

out remission; for, in these people, the largeness of the abdominal aperture, the thickness of the hernial sac, and the relaxation of the mesentery, make a new descent always to be apprehended and guarded against.

An omental rupture, which has been so long in the scrotum as to have become irreducible, is very seldom attended¹ with any bad symptoms, considered abstractedly: but, as I have already said, it is constantly capable of being the occasion of an intestinal hernia, and all its consequences; neither is that all, for the omentum, either so altered in form and texture, or so connected as to be incapable of reduction, may by accident inflame, and either become gangrenous or suppurate, and be the occasion of a great deal of trouble. Of this I have seen two or three instances, one of which I will relate.

I was desired to see a gentleman, from whose scrotum near a pint of brown, sanius, foetid fluid had been discharged two or three days before. The account he gave of himself was as follows: That he had been from his youth subject to the descent of a soft, flabby body into the scrotum, when he was in an erect posture, but which for many years he could put up when he pleased, and which always went up when he lay down; that having no trouble from it, and being naturally shy and bashful, he had done nothing to it, nor showed it to any one; that from the

¹ Garengot relates the case of an epiplocele producing very bad symptoms; and so does Dionis.

sudden spring of an unruly horse, he had struck it with great violence against the pummel of his saddle, which had given him immediate pain; that the next day it swelled still more, and became more painful, but that being afraid, or ashamed, he still concealed it, and only anointed it with something greasy, till at last he could bear it no longer: the person to whom he showed it took it for a hydrocele, tapped it, and let out the fluid just mentioned; and on the fifth or sixth day from this operation I saw it.

The whole scrotum was much inflamed, and the orifice made by the trocar foul and sloughy: he had a degree of heat and fever upon him, which forbad any operation at that time; and therefore I desired that he might be dressed soft and easy, have an emollient cataplasm applied to the whole scrotum, lose some blood, and have a clyster.

By proper care the tumor subsided, his fever left him, and the slough casting off largely brought the putrid omentum within view; upon sight of which I would have laid the whole open, but was not permitted. I enlarged the orifice a little, and in so doing cut through an old hernial sac, which was very thick and hard; what part of the omentum was loose I brought away with a pair of forceps; but the separation of the whole took up much time, and the hard hernial sac caused so many abscesses, and occasioned so large a discharge, that, being a valetudinarian,

he had certainly sunk under it, had it not been for the free use of the bark.

If, instead of this method of treating it, I had been permitted to have laid it open through the whole of its length, removed the rotten omentum, and cut off some part of the sides of the hernial sac, the cure would have been shortened, and the scrotum would have been left in a much better state.

That an omental rupture, which has so long resisted all attempts for reduction, as to create a belief of its being absolutely irreducible, may now and then, by long rest and abstinence, become capable of being returned, I am under no doubt, for reasons which have already been mentioned: and not long ago, I had myself a patient in St. Bartholomew's hospital, who underwent the operation for a radical cure of a hydrocele, who had also an omental hernia, which I and some others had often tried ineffectually to reduce: this, during the time of his confinement to bed after the operation, went up of its own accord, and was ever afterwards kept there by a truss.

It sometimes happens in old compound ruptures, that the piece of intestine is reducible, and that of the omentum is not; in which case we are told, that the portion of intestine should be kept up by a truss, whose pad may be so made, as not to press on the omentum while it restrains the intestine.

I will not deny that this may now and then be

practicable, but it is not often so, and it ought to be particularly attended to, and very carefully watched, lest a small piece of gut slip down, and being pressed on by the truss produce fatal mischief.

I have seen an omental rupture, in which the piece included in the sac had the knotty hardness, the pain, and every other symptom of a cancer.

SECT. IV.

UNDER the third division I reckon those ruptures which are reducible, but whose reduction is difficult, and which are attended with pain and trouble and hazard.

Difficulty of reduction may be owing to several causes. The size of the piece of omentum, or the inflamed state of it; the quantity of intestine and mesentery; an inflammation of the gut or its distention by fæces or wind; or the smallness of the aperture of the tendon through which the hernia passes. But to whatever cause it be owing, if the prolapsed body cannot be immediately replaced, and the patient suffers pain, or is prevented thereby from going to stool, it is called an incarcerated hernia, a strangulated hernia, or a hernia with stricture.

The symptoms are a swelling in the groin or scrotum resisting the impression of the fingers: if the hernia be of the intestinal kind, it is generally painful to the touch, and the pain is increased by coughing, sneezing, or standing

upright. These are the very first symptoms; and if they are not relieved, are soon followed by others, *viz.* a sickness at the stomach, a frequent reaching or inclination to vomit, a stoppage of all discharge per anum, attended with a frequent hard pulse, and some degree of fever.

A patient in these circumstances may be looked upon as in some danger, and requiring immediate assistance. A stricture made on the prolapsed part of the gut, by the borders of the natural aperture in the tendon of the oblique muscle, is the immediate cause of these symptoms, which nothing can appease or remove, except what will take off that stricture. This can be accomplished only by removing the part so bound from the tendinous opening; that is, by returning it back into the belly whence it came; or by dividing a part of the tendon itself: the former of these, when it can be practised, is always most eligible, and makes our present subject.

I have already observed, that a portion of intestine, while it is neither bound by any degree of stricture, nor affected by inflammation, will remain quiet in a hernial sac in the scrotum, and perform its proper office freely and perfectly; but the instant either of the above-mentioned accidents (particularly the former) happens, the case is altered; the passage both of the aliment and fæces is stopped or interrupted; the peristaltic motion of the whole canal is disturbed or perverted; and the circulation of the blood,

through the straitened portion of intestine, is so impeded, that if the obstruction is not removed in time, a mortification must follow.

Every symptom which attends an incarcerated rupture depends on this cause, and is justly accountable for from it. The tumor, the pain, the tension of the belly, the nausea, the vomiting, and the suppression of stools, are so many effects produced by it, and removeable only by removing it.

My present consideration being those ruptures which are capable of being returned, I am now to speak of the manner of attempting such reduction.

The patient should be laid in a supine posture, with his trunk certainly as low, if not lower, than his thighs; the thigh on the diseased side should be so elevated, as to contribute as much as possible to the relaxation of the abdominal aperture; and then the surgeon grasping the lower part of the tumor gently with his hand, in such a manner as to keep the testicle from ascending, and the intestine from descending, must endeavour to procure the return of the latter through the ring, as it is vulgarly called, by gentle continued pressure toward that opening. If the case be a bubonocoele, there will be no occasion for endeavouring to grasp the tumor, but by continued, moderate pressure on it with the fingers, to endeavour the return of the piece of gut.

This may serve for a general description of the method of performing this operation; but

the exact manner of executing it is one of those manœuvres which can be learnt only by observation and practice, and of which no verbal description can convey an adequate and perfect idea: knowledge of the structure and situation of the parts, will instruct any one how to go about it, and a little practice will soon make him adroit.

The posture of the body and the disposition of the lower limbs may be made very assistant in this operation, when the difficulty is considerable; the nearer the posture approaches to what is commonly called standing on the head, the better, as it causes the whole packet of small intestines to hang, as it were, by the strangulated portion, and may thereby disengage it. A little time and pains spent in this manner will frequently be attended with success, and obtain a return of the part; but if it should not, and the handling of it (which I must repeat should always be gentle) becomes painful, and very fatiguing to the patient, we are advised to desist a few hours, and try the effect of other means.

These means are phlebotomy, clysters, cathartics, the application of cataplasms, fomentations, embrocations, &c.

Children, especially very young ones, bear the loss of blood very ill, and are very apt to swoon, if the quantity be at all considerable; if therefore such accident happens, the surgeon should embrace the opportunity which such general relaxation will afford him of re-

ducing the rupture, especially as it gives him another advantage, by preventing the child from crying, and making resistance.

Perhaps there is no disease affecting the human body in which bleeding is found more eminently and immediately serviceable than in this, and which therefore, if there are no particular circumstances in the constitution prohibiting it, ought never to be omitted; but, on the contrary, should be freely and largely repeated, if it appears at all necessary.

A semicupium, or warm bath, will, by the general relaxation which it necessarily produces, be found frequently serviceable.

The use of warm fomentations, soft cataplasms, and relaxing oily embrocations, are also advised with a view to relax the tendon of the abdominal muscle, and to render the return of the parts contained in the hernial sac easy; but I am afraid that such kind of applications have in general been the occasion of much more mischief than good. The effect of them can hardly reach beyond the skin and *membrana cellularis*, and may possibly, by relaxing them, take off some small part of the pain which arises from their distention, but will seldom have any effect on the immediate seat of the disease, the tendon of the oblique muscle; the enlargement or relaxation of which only can be of material service.

I know that in this I differ from the majority both of writers and practitioners, but having (as I think) truth on my side, I do again venture to say, that I verily believe, that the confidence

which has been placed in such kind of applications has destroyed many more lives than it has saved. A hernia, with painful stricture, and stoppage of stools, is one of those cases in which we can seldom stand still, even for a short space of time; if we do not get forward, we generally go backward; and whatever does no good, if it be at all depended upon, certainly does harm, by occasioning an irretrievable loss of time: of this kind I take the cataplasm and embrocation^m to be. While the former is applied, or the latter used, no other more powerful means are made use of; and though it has the appearance of doing something, yet I fear it is little more than specious trifling; especially if the case be at all pressing.

Very different have been the opinions of different people concerning the use of cathartic medicines; some advising them strenuously, others placing no dependence on them at all. As different also have been the opinions of those who do advise them, with regard to the kind of medicine proper on this occasion; some prescribing those of the lenient kind, such as Glauber's salt, infusum sennæ, &c. others the more powerful or ponderous kind of remedies,

^m In a very pompous modern book may be seen an operose, expensive process, for making an ointment of a solution of gold, pearl, &c. to be used for assisting the reduction of strangulated intestines, and which, when properly made, may possibly be as useful as pomatum, ointment of elder, or any other greasy application.

such as Extract. Cathart. Jallap, Mercurius dulcisⁿ, &c.

I believe I may venture to say that I have tried them all, but I cannot say that I have such faith in any of them as to think very highly of them. With regard to the former, *viz.* the lenient sort of purges, it is not often that a patient in these circumstances can keep them upon his stomach; and even when they are not rejected by vomit, they very seldom have force sufficient to answer the end proposed. The more stimulating ones are certainly better calculated to excite the peristaltic motion of the intestines (the one thing to be aimed at), and thereby free the confined piece; but on the other hand, if they do not succeed, they add to the fulness and tension of the belly, as well as to the heat and thirst.

I would by no means be understood to mean that I am absolutely against the use of cathartic medicines; I only mean to signify, that I have no great dependence on them, and that I think persisting in the ineffectual use of them often adds unnecessarily to the suffering of the patient.

But though I cannot say that I have seen frequent benefit from the exhibition of cathartics by the mouth, yet I have often experienced the

ⁿ The ingenious and learned Dr. Monro of Edinburgh, says, that he has more than once reduced a rupture of this kind by a smart dose of jallap and mercurious dulcis, when other methods have failed. The same gentleman says, he has seen the external application of cold claret, or snow, instead of a warm poultice, used with good success.

good arising from acrid, stimulating clysters, and suppositories frequently repeated; particularly from the smoke of tobacco*, and from a composition of salt, honey, and aloes, boiled to the proper consistence of a suppository. By these I have seen very alarming ruptures returned, when they have been thought capable of being relieved by nothing but the chirurgical operation.

There is another method of endeavouring to obtain relief in this case, which has been proposed by few, and I hope practised by fewer (though I have seen two patients, upon whom it had been tried, and who were both destroyed by it): it is the making several punctures with a round needle through the tumid scrotum into the gut, in order (as it is said) to let out the air which is supposed to distend the latter, and prevent its return. If this practice was worth a serious refutation, many arguments, drawn from the nature both of the parts and of the disease, might be produced against it: but it is really too absurd to waste either my own or the reader's time about it.

There is no circumstance attending ruptures with stricture, in which more variety is found, than in the time which they will safely admit to be spent in their reduction: some have been successfully replaced at the end of eight or ten days, others have proved fatal in one. This difference

* I cannot help thinking that the present machine, which is used for the tobacco clyster, might be considerably improved, that is, might be made to throw in the fume in much greater quantity, and with more certainty. A pump is now made for this purpose, which I have used very successfully.

may proceed from difference of constitution and habit, or from some particular circumstance in the disease itself; but let the cause of it be what it may, as it never can be absolutely foreseen, it should never be trusted; the sooner a rupture is reduced, the sooner the patient is out of danger from the stricture, and the sooner will he be rid of those symptoms, which it has already occasioned.

Recent hernias are in general more liable to stricture than old ones, for reasons which are obvious from what has already been said; but when old ones get into the same circumstances, the symptoms are much the same; though I think in general they are not altogether so pressing, and the latter generally admit of more time to attempt reduction in. The smaller the portion of intestine which is engaged, the greater the pain is, and the more hastily do the symptoms advance. I have seen a bubonocoele in a young woman prove fatal in less than a day, which had never been down before, and in which the portion of intestine was so small, as hardly to engage its whole canal.

Omental ruptures in general are not subject to bad symptoms arising from stricture, though they will sometimes be painful and troublesome, from the connexion of the caul with the viscera, as I have often seen. As this is an accident which they are all liable to, they should never be suffered to remain down, if they are reducible; and that not only on this account, but also because they render the patient always liable to the de-

scent of a piece of gut. In general they are more easy of reduction than the intestinal, and being not painful will admit of more free handling, as well as more time to be spent in the attempt^p.

I have already mentioned the reasons why an omental rupture is sometimes incapable of being reduced, *viz.* adhesion to the sides of the hernial sac, or such an alteration in the form of it, as makes it impossible for it to pass through the abdominal aperture. When this is truly the case, as is most reasonable to suppose when it resists all proper attempts, there is no remedy but to suspend the weight of it in a bag-truss, and thereby render it as little troublesome as possible. This is indeed all that can be done when the rupture is absolutely irreducible; but in books will be found directions to leave an old omental hernia down, and suspend it in a bag, even though it should be reducible, rather than return it into the belly, lest it should lie there in a lump, and make the patient uneasy. This is one of those maxims which writers receive from each other, and deliver down to posterity, without inquiring into their propriety. It may in some few particular cases be right to do so, but cannot be admitted as a general rule: surely it must always be worth while to try how it will be when it is up, rather than be content with a method, which is hardly palliative, and which always may be productive of new evil.

^p Writers of good credit have given accounts of the worst symptoms from a mere epiplocele; in Dionis may be seen a case of this kind, in Garengot, and others.

When the parts are fairly reduced, the next consideration is, how to keep them from falling down again: this can only be done by a bandage, the pad of which must make a constant pressure against the opening in the abdominal tendon, and thereby not only keep the gut or caul from pushing out, but make the sides of the hernial sac approach each other as near as possible.

In the making and adjusting this kind of bandage, some ingenuity is necessary: if it be not so made, and so put on, as to do good, it will do harm: if it does not keep the intestine up, the patient is much more liable to mischief with it than without it; and it has often, by pressing on the rupture while down, proved very pernicious, in cases where there has been no degree of stricture from the tendon. It therefore behoves every surgeon to see that the truss which he orders is well made and properly applied, lest all his pains should be baffled by the bad make, or injudicious application of this piece of machinery.

If the symptoms of pain, inflammation, &c. ran high before the parts were reduced, they will not always cease immediately after; and as the symptoms which remain after the gut is returned, do in all probability proceed from its having been inflamed by the stricture, such remedies as are proper in that case ought to be made use of; the body should be kept open, and the diet and regimen should be low and sparing, while the least degree of tension or

pain remain; in short, till all complaint is absolutely removed from the abdomen, and the intestines do their office freely, and without trouble.

SECT. V.

I AM now come to the fourth division, under which I comprehended all those ruptures, which are in such a state as to be irreducible by the mere hand, and in which a chirurgical operation is necessary for the preservation of the life of the patient.

Impracticability of reduction may be owing to many causes, most of which have already been recited; such are, alteration of the form of the parts contained in the hernial sac, largeness of their quantity, adhesions either to the sac, or to each other, or both, and a stricture made on the intestine, by the borders of the aperture in the abdominal tendon: these are each of them causes why ruptures are sometimes incapable of being returned back into the belly, and will require our consideration in their proper places; but in this it is my intention to speak only of the last, it being that which calls most immediately for relief, which most frequently requires the surgeon's knife.

Whether the primary and original cause of the mischief arising from this stricture, be in the contained, or in the containing parts of a rupture, I

will not now stay to inquire; nor whether the stricture made by the tendon be a cause, or an effect; but shall consider the intestine as so engaged in it, as to be rendered incapable of being returned into the cavity of the belly (by the hand only), and suffering in such manner, by being so bound, as to produce a series of bad symptoms, and at last (if not relieved) death.

This stricture, which according to its different degrees renders the reduction of an intestinal hernia either difficult or impossible, is according to such degrees productive of what are called the symptoms of a strangulated rupture, and which are more or less pressing, as they more or less interest the life of the patient.

The earliest of these symptoms were related in the former section, as attendant on those ruptures which were reducible, though with difficulty, *viz.* tumor in the groin or scrotum, attended with pain, not only in the part, but all over the belly, and creating a sickness and inclination to vomit, suppression of stools, and some degree of fever: these are the first symptoms, and if they are not appeased by the return of the intestine, that is, if the attempts made for this purpose do not succeed, they are soon exasperated; the sickness becomes more troublesome, the vomiting more frequent, the pain more intense, the tension of the belly greater, the fever higher, and a general restlessness comes on, which is very terrible to bear. When this is the state of the patient, no time is to be lost: a very little delay is now of the utmost consequence; and if the

single remedy which the disease is now capable of be not administered immediately, it will generally baffle every other attempt. This remedy is the operation, whereby the parts engaged in the stricture may be set free. If this be not now performed, the vomiting is soon exchanged for a convulsive hiccough, and a frequent gulping up of bilious matter; the tension of the belly, the restlessness, and fever, having been considerably increased for a few hours, the patient suddenly becomes perfectly easy, the belly subsides, the pulse from having been hard, full, and frequent, becomes low, languid, and generally interrupted; and the skin, especially that of the limbs, cold and moist; the eyes have now a languor and a glassiness, and a lack-lustre not easy to be described; the tumor of the part disappears, and the skin covering it sometimes changes its natural colour for a livid hue; but whether it keeps or loses its colour, it has an emphysematous feel, a crepitus to the touch, which will easily be conceived by all who have attended to it, but an idea of it is not so easy to be conveyed by words: this crepitus is the too sure indicator of gangrenous mischief within. In this state, the gut either goes up spontaneously, or is returned with the smallest degree of pressure; a discharge is made by stool, and the patient is generally much pleased at the ease he finds: but this pleasure is of short duration, for the hiccough and the cold sweats continuing and increasing, with the addition of spasmodic rigors and subsultus tendinum, the tragedy soon finishes.

These are the symptoms of an *incarcerated hernia*, this their general progress, and their too frequent event. The first class of them imply some degree of hazard, but are often capable of being relieved without the use of the knife; the latter frequently require it, and very often prove fatal by the neglect, or too late application of it.

Perhaps there is not in the practice of surgery a point which requires more judgment, firmness, or delicacy, than to determine the precise time, beyond which this operation should not be deferred, and for a surgeon to conduct himself so as to induce a patient to submit to it early enough for his preservation. The time in which a piece of gut will become gangrenous from stricture, or get into a state approaching to that of a gangrene, is extremely uncertain, and depends on circumstances which no man can foresee. There have been several instances of ruptures, attended by pressing symptoms of stricture, which have been safely returned by the hand only, at the end of several days; or the operation having been performed at the same distance of time, the parts have been found sound or unhurt: on the other hand, there are many instances producible, of the intestine having been with great difficulty replaced, or of its returning, *sua sponte*, from being mortified, or (the operation having been submitted to) of its having been found in such state by the operator, at the end of not many hours.

I have myself seen a small portion of the intestine become perfectly gangrenous, in one day and night from its first expulsion.

The directions which are given to us by writers, are not to be trusted without much circumspection; the signs or marks which they in general regard as proofs of the proper time for operating, are most frequent proofs that the time is just elapsed, and that, instead of waiting for the arrival of such symptoms, we should have prevented them. On the other hand, to propose an operation of so much consequence, before it shall be thought absolutely necessary, may admit of such misconstruction, as no man would wish to have put upon his conduct. Indeed, I do not know any situation, in which a judicious and prudent man can be placed, in which it will behove him to be more wary and circumspect, more delicate, or more steady.

The two principal circumstances which have most contributed to the infrequency of performing this operation, are, a dread of great hazard from the operation itself, considered abstractedly, and a fear of bringing a disgrace upon it, by having performed it too late, *ne occidisse, nisi servasset, videretur*^a. The first of these is vastly greater than it ought to be, and is most frequently the cause of the latter; so that if the one can justly be lessened, the other will not be so likely to happen.

That the operation considered simply is not

^a Celsus.

void of hazard, every man who knows any thing of the nature of wounds in membranous and tendinous parts, must acknowledge: they are certainly subject to fever and inflammation, are difficult and slow of digestion, and in some particular habits are apt to become gangrenous; but that they are necessarily, or even most frequently hazardous, daily and manifold experience contradicts.

One evil is very frequently the parent of others. By being afraid of incurring that degree of hazard which is thought to attend the operation merely, the generality of people neither attend to, nor embrace the most proper time for the safe performance of it; or that in which its danger must be necessarily least, because least combined with that which may arise from the state of the parts within; a state even at first not absolutely safe, but which all delay beyond a certain time must hourly increase the hazard of.

If I might presume to give my opinion on this subject, I should say, that the operation ought always to be performed as soon as possible after it appears that all rational attempts, by large and free bleeding, the warm bath, clysters, &c. are found to be ineffectual, or that the symptoms rather increase than decrease, while such means are made use of, and that the^r handling necessary

^r Perhaps I may be thought somewhat singular; but from what I have seen, I am much inclined to believe, that when the parts are very painful to the touch, and the scrotum large, and much upon the stress, more harm is generally done by the manual attempts for reduction, than good. In this state, the

for reduction becomes more and more painful; for if it be delayed until the inflammation has attained a certain height, though the parts upon being laid open are not found quite gangrenous, that is no proof that the want of success must be set to the account of the operation merely. That state of inflammation, either of the intestine or of the hernial sac, which is just not gangrenous, is no state of safety, nor are we sure that removing the stricture will at this time appease the symptoms, or abate the hazard:—far from it: such an alteration may have already been made in the intestine that a mortification will ensue, though it be set free and returned into the belly. A ligature need not be continued round any part of a living animal, until it becomes quite gangrenous, in order to produce its destruction. There is a certain point of time,

great distention of the intestine renders it very incompressible, and very little likely to be returned through the tendinous aperture by mere force (for such it is, in whatever degree it be used), and either a brisk irritating purge, or a very stimulating clyster (particularly the tobacco-smoke), are more likely, by exciting the peristaltic motion, to disentangle it, than even the most judicious method of handling it. And in cases where such remedies have been previously used, I verily believe the sudden reduction of the piece of gut is often more owing to their effect than to that of the hand. But I must desire that this may be rightly understood, and not mistaken for a dissuasive against manual attempts for reduction; I only mean, that there is such a state of an incarcerated intestine (which state I have just described), in which, from its size, inflammation, distention, &c. compression by the hand is very little likely to procure its return, and very likely, if it does not do so, to do considerable mischief.

in which the circulation is so prevented, that the same event will follow, though the ligature be then removed. It is indeed a nice and no very easy matter to find this precise time: but this difficulty and uncertainty are the strongest reasons for anticipating rather than waiting for it; for when in the present case such time arrives, or is nearly arrived, the risk of the operation becomes complicated with that arising from the diseased state of the parts within; and the chance of success is thereby much lessened.

A mortification of the intestine is not absolutely, necessarily, and always fatal: but the instances of those patients who have escaped with life in these circumstances are so very few, that it may fairly be reckoned among the deadly diseases. If the mortified gut returns back into the belly, upon the gangrene taking possession of the part which was bound, it will most probably prove fatal; and though there have undoubtedly been instances of people who have survived the operation, though it has been delayed till the parts have been in such condition, yet they are so very rare, that they are hardly sufficient to found a reasonable expectation upon; and of the very few who have thus escaped, the majority have been obliged to hold life upon terms which have been very fatiguing and disagreeable.

When the operation shall be thought necessary, the manner of performing it is as follows: —

The pubes and groin having been clean shaved, the patient must be laid on his back,

on a table of convenient height, with his legs hanging easily over the end of it: then with a straight dissecting-knife an incision must be made through the skin and membrana adiposa, beginning just above the place where the intestine passes out from the belly, and continuing it quite down to the lower part of the scrotum. Upon dividing the adipose membrane, there generally appear a few small, distinct, tendinous kind of bands, which lie close upon the hernial sac, which must be divided also, as well as the sac: the same knife with which the incision through the skin was made will execute this, which should be done with a steady hand and great caution, it being of very different degrees of thickness in different cases: in the bubonocoele, or that which is confined to the groin, the sac is most frequently thin, consequently more easily divided, and requires greater attention in the operator: in the oscheocoele, or scrotal hernia, if it be recent, the sac is usually thin also; if ancient, it is sometimes of considerable thickness, but whatever be the state of it, if the operator has any doubt, let him, as soon as he had made a small puncture in what appears to him to be the hernial sac, endeavour to introduce a probe into it: this will give him the necessary satisfaction; for if he has not pierced the sac, the probe will be stopped by the cells of the common membrane; and, if he has, it will pass in without any obstruction. The place to make the incision in the hernial sac is about an inch and half below the stricture, and the opening need not be larger than just to

admit the end of the operator's fore-finger, which, considering the great dilatability of these membranes, will be a very small one. The fore-finger introduced into this aperture, is the best of all directors, and upon that a narrow-bladed, curved knife, with a bold probe point, will be the only instrument necessary to finish the operation. With this knife on the finger (the point of the former being always short of the extremity of the latter), the sac must be divided quite up to the opening in the tendon, and down to the bottom of the scrotum.

Upon the first division of the sac, a fluid generally rushes out, which fluid is different in quantity, colour, and consistence, according to the date, size, and some other circumstances attending the rupture.

This fluid has sometimes been mentioned as a defence against an accident from the knife, in the first division of the hernial sac, as if it kept the intestine at such a distance, as thereby to lessen the hazard of its being wounded; but this is a very fallacious circumstance, and never to be trusted: the security of this operation depends entirely on a competent knowledge of the parts, a steady hand, and an attentive eye.

Different operators, especially among the French, have proposed a number of different instruments for the safe performance of this incision; the *bistouri cachée*, the *bistouri herniaire*, the winged director, the blunt scissors, &c. &c. &c. all which are calculated for the defence and preservation of the intestine, in the division of the

sac and tendon; but whoever will make use of the two knives just mentioned will find that he will never stand in need of any other instrument, and that he will with them be able to perform the operation with more ease to himself, with less hazard to his patient, and with more^s apparent dexterity, than with any other whatever.

The sac being laid open, the intestine generally pushes out immediately (unless it is confined, by being enveloped in the omentum), and

^s They who are not accustomed to perform operations of such consequence as this is, are apt, from timidity, to be too sparing in making their external incision, by which means they add considerably to their own embarrassment, and to the fatigue of the patient. A free division of the hernial sac and scrotum, downwards, gives room for the more easy admission of the finger into the stricture, in order to divide it, and affords an opportunity of handling the intestine or omentum more gently, as well as more properly, in order to return them into the belly. both which necessary parts of the operation are much impeded by a small incision.

As therefore no possible advantage can arise from a small wound, but on the contrary it may be attended with great inconvenience both to the patient and surgeon, I would take the liberty of advising, when such an opening is made in the hernial sac as will admit the operator's fore-finger, and upon it his knife, that he immediately divide the sac and scrotum down to the bottom. It is true, that upon such division the quantity of intestine will seem to be increased, and an ignorant by-stander may be alarmed at this fallacious appearance, which is produced merely by the confined compressed gut being set free, and not by the addition of any more. The advantage which will arise to the operator, and consequently to the patient, from such division, is real and great: it will enable the former to finish his work with freedom, and spare the latter a great deal of pain.

appears to be much more in quantity than it seemed to be, while it was confined within the scrotum.

This is the time to try whether by gently drawing out a little more of the gut, its bulk cannot be so reduced as to enable the surgeon to return it back into the belly, without dividing the tendon. In the case of the protrusion of a very small piece of intestine it has been found practicable, the difficulty of returning a large portion arising principally from the quantity of mesentery engaged in the stricture; and, indeed, though it may now and then happen that a small piece of gut may be returnable without a division of the tendon, yet if it cannot be very easily accomplished, it had better not be attempted, since in the state in which this part must necessarily be to require the operation thus far, any degree of force used to it will, most probably, be more prejudicial and hazardous than the rest of it, if performed properly with a knife.

An attention to the natural structure, figure, and direction of the parts, will give us the best information how to make the division of the stricture to the best purpose, and with the least hazard.

The tendon of the obliquus descendens muscle runs in an oblique direction from above downward, and the natural opening which is always found in it, and through which the hernia passes, is made by a kind of separation of the fibres from each other. The direction of this opening is the same as that of the tendon, that is, obliquely

downward, from the os ilion to the os pubis: the knife therefore should be so managed, as rather to continue this separation, than to make any transverse section; its edge should be applied to the superior and posterior part of the oval, and carried upward, and obliquely backward, until a sufficient opening is made to serve the purpose. By this means the fibres of the tendon will be rather separated from each other than cut, and in all probability the risk arising from the incision will be lessened.

It is generally advised to make the division of the stricture free and large, as well to permit the easy return of the parts, as to prevent the inconvenience which it is supposed will be more likely to attend a small wound in a tendinous body than a large one: the first intention, the easy return of the intestine, should certainly be fulfilled, and therefore the incision ought always to be large enough for that purpose, and to afford an opportunity of passing the end of the finger round on the inside, in case of any adhesion; but as too large an opening may be attended with very ill consequence, it ought also to be guarded against. In the majority of cases, a small incision will be found sufficient for the purpose of reduction; and where the parts are free from adhesion, and the safe return of them is the only object of attention, a small division made in the manner already directed is not liable to any more pain and trouble than a large one, and may therefore be safely trusted.

Among the authors who write from each other,

and not from practice, are to be found accounts of cases, in which the tendon only has been divided, and not the hernial sac, which latter has been returned through the enlarged opening, with its contents enclosed; and the same writers are very particular in their directions how to accomplish this operation. If it was practicable (which the universal adhesion of the sac with the cellular membrane of the spermatic chord renders absolutely not so), there would be still several material objections to the doing it; which objections, as the thing is not capable of being executed, it is needless to mention.

Though I am perfectly satisfied that the case of a strangulated hernia is most frequently as I have represented it, *viz.* that the disorder in the intestine is originally produced by the stricture made on it by the borders of the tendinous opening of the abdominal muscle, and that the gut is in general perfectly sound, and free from disease, before it becomes engaged in such stricture, yet I think it right to acquaint the uninformed reader, that it has been and still is the opinion of some very ingenious men, that the disease is originally in the gut, and that the stricture is an accident arising from the inflammation and distention of it; or, in other words, that the intestine is first inflamed, and by means of the alteration produced by such inflammation, becomes too large for the tendinous aperture, which therefore makes a stricture on it, and which, they think, is the reason why the surgical operation is often unsuccessful.

For my own part, I cannot think that either the fact or the inference is in general true.

An inflammation most certainly may, and frequently does, attack any part of the intestinal canal; and consequently that part of it which happens to be included within a hernial sac may accidentally be so affected. When this is the case, the swelling and distention which naturally and necessarily attend an inflammation of the gut, will render it less capable or perhaps quite incapable of repassing the opening in the abdominal tendon, which tendon may therefore make such stricture on the part so diseased, as greatly to heighten the first symptoms, and bring on still worse; and when this happens, the operation will also be less likely to be successful, it being calculated for the relief of only such symptoms as arise from a piece of intestine (in other respects sound and free from disease) being so bound by the said tendon, as to have its peristaltic motion, and the circulation of the blood through it, impeded or stopped: whereas, the other complaint, consisting primarily and originally in an inflammation of the gut itself, the mere removal of it from stricture is not, nor can be, equal to the cure of the disease. That the case is a possible one I make no doubt, having once or twice seen it in old ruptures; but it is a very rare one, and by no means to be admitted either as a proof that the mischief done to the intestine, in the generality of strangulated ruptures, does not most frequently proceed from the stricture made by the tendon, or a dissuasive from performing

an operation, whenever it would otherwise be thought necessary.

It is not however a mere speculative point; it is really a matter of consequence, and ought to be attended to by all those who have it in their power to make frequent observations on such subjects; for on the truth or falsehood of this doctrine depend a few very material points in practice, some of which ought so to influence a surgeon's conduct as to make it considerably different in one case from what it should be in the other.

Very bad symptoms, such as pain, tension of the belly, sickness, vomiting, hiccough, fever, and suppression of stools, are often produced in a very short space of time by the descent of a piece of gut, upon some exertion of strength in persons who were immediately before such accident at perfect ease, and free from all complaints relative to the belly. If the disease be not discovered, or if our attempts to reduce the intestine are not successful, these symptoms are heightened, and the patient often dies of a mortification: if we do succeed in the timely reduction, all these terrible symptoms often cease instantaneously, and the patient feels neither pain nor inconvenience of any kind from that moment. Would this most probably and most frequently happen, if the disease was generally in the intestine, and the stricture of the tendon merely accidental?

In that kind of disease of the intestinal tube, which is said to be produced by inflammation,

and thought to be attended with spasmodic stricture, or contraction of its muscular fibres, there is such an alteration made in its peristaltic motion, and such impediment in the execution of its principal offices, that what is taken into the stomach is rejected by vomit, and fæces are not protruded through the colon and rectum, the belly is tight and painful, the skin hot, the pulse quick and hard, and the patient feels a restlessness and anxiety which are very disagreeable: this is one of those cases which require immediate assistance, and will admit of no delay: the progress of the symptoms from bad to worse is generally very rapid: and if the disease be not soon subdued, the patient dies. Free and repeated evacuation by phlebotomy and lenient purges, the use of a semicupium, a warm bath, clysters, and sometimes brisk cathartics, joined with opium, are the remedies generally prescribed, and if made use of in time are often successful; but if neglected, the case most frequently ends ill.

It is very true that the same symptoms occur in a strangulated hernia; but if that hernia be reducible, they generally cease upon such reduction, nor does the patient want any other assistance than what is necessary to prevent a new descent of the gut. In this respect therefore the two diseases differ very materially: in the latter, nature stands in need of no further assistance from art, but as soon as the manual operation is performed, returns to the execution of her natural functions; in the former, she is

found so very insufficient toward assisting herself, that it seems to be one of the few cases, in which medical assistance can hardly ever be dispensed with.

Now, if the bad symptoms attending an irreduced rupture were primarily owing to an inflammation of the intestine within it, and that the tendinous aperture made a stricture on it, only in consequence of the distention of the gut—allowing this stricture to aggravate the complaint considerably—yet the division of it, or the reduction of the intestine, can never be supposed to do more than alleviate or remove such aggravation; the original inflammation of the gut must still remain, nor can it be lessened by the intestine having been girt tight by the tendon; and yet, as I have just now observed, we very rarely (at least in ruptures that are not of ancient date) meet with any trouble or complaint after reduction is timely and completely made, and the intestine returned into the belly in a sound state; the vomiting most frequently ceases immediately, or in a very short space of time; a discharge is made by stool, the tension of the belly goes off, and though the patient is not always instantaneously well, in cases where the symptoms have been very threatening, yet all such complaints as proceeded from an obstruction to the execution of the proper offices of the intestinal canal, generally disappear immediately.

From the nature and progress of the symptoms in a *miserere* (as it is called), from the extreme

pain of the first attack, from the perfect ease a little while before death, and from the mortified appearance of the intestines after such event, I think it is most probable, that if we could have an opportunity of seeing the intestine during the first part of this complaint, we should find all the appearances of inflammation: whereas, in many of those upon whom the operation for the bubo-nocele is successfully and timely performed, this is not the case; the intestine seldom bears marks of high inflammation, unless the operation has been long delayed, nor do the symptoms of such complaint usually attend afterward; the mortified part often does not exceed an inch, or an inch and a half in length, and is almost always confined to that part of the gut which is on the outside of the tendinous opening, all within the belly being sound and fair. To which may be added this circumstance, that when the parts contained in a hernial sac become mortified by the delay of the operation, the sac itself (which has no immediate connexion with the intestine or its vessels), the cellular membrane covering it, nay the skin, is often found in the same state.

These are my principal reasons for believing that the mere stricture made by the tendon is, in the generality of incarcerated ruptures, not only a sufficient, but the primary, and indeed the sole cause of all the symptoms, and all the mischief; and therefore I must also be of opinion, that whoever neglects to perform, or at least to propose the operation, when he finds reduction

impracticable, and the symptoms pressing, does in some measure contribute to the destruction of his patient^t.

On the other hand, I am convinced by some instances which I have met with (and which one time or other I hope to be able to present to the public in a collection with many others), that the opinion has some foundation in truth, and that persons labouring under old ruptures, which have been long in the scrotum without giving any trouble, in which the quantity of intestine is often very large, the tendinous aperture much dilated, and the hernial sac thick and firm, are those to whom this misfortune has happened, and who indeed, if their case be duly considered, will be found most liable to it; there being no reason in nature why that part of the intestine which is contained in such a hernia, should not be subject to every complaint, or disease, to which every other part of that canal is liable:

^t Indeed, though we should suppose the case to be as those gentlemen have represented it, *viz.* that the complaint begins in the intestine, and that the stricture made by the tendon is not a primary cause, but an effect of the disease, I do not see how we can avoid proposing the operation; for whether the increased size of the gut be owing to the inflammation, which renders it too large to pass the abdominal opening, or whether it be the mere effect of stricture made by the tendon, in either case it will bind equally, and the event must be exactly the same, as far at least as the stricture has to do with it: for when the intestine is inflamed, whether such inflammation preceded or succeeded the confinement of it by the tendinous opening, the symptoms can never be appeased, but by the release of the gut from its confinement.

and this opinion I am more confirmed in, by having met with more than one subject with such old ruptures, who have had all the symptoms of a strangulation, and in whom, I am sure, there was no stricture made by the tendon, though the gut remained in the scrotum.

Although I have through the course of this section repeatedly recommended the early performance of the operation, yet I must desire not to be misunderstood, as if I meant to advise it before proper attempts had been made for reduction, or the symptoms become alarming; much less that I would propose it as a means to obtain a radical cure in those ruptures which are returnable by the hand merely; a thing boasted of, and practised by pretenders, but not to be thought of by any man who has either judgment, humanity, or honesty.

The only intent of it should be to preserve life, by rescuing the patient from the hazard of mortification, likely to ensue from the stricture; and though I have pressed it with such view, and in such circumstances, and think it ought always to be done, yet I should be very sorry to have it thought that I encouraged the performance of it wantonly, or unnecessarily, which must be the case, whenever it is done with any other intention.

Considered as a means to obtain a perfect or radical cure, or to prevent the necessity of wearing a truss, every man at all conversant with these things knows, that it most frequently fails of procuring that end, and that most of

those people who have been obliged to submit to it for the preservation of their lives, have also been obliged to wear a bandage ever afterwards, to prevent the intestine from slipping down behind the cicatrix into the groin.

In short, though the danger from the operation, when performed in time, is in my opinion never to be mentioned with that which must arise from the stricture, if neglected, yet such operation never ought to be attempted but with a view to prevent the impending ill effects of such stricture, and will not ever (I dare believe) be put in practice with any other intention, by any fair or judicious practitioner, by any man who has the least regard for his own character, his fellow-creature's sensations, or for any thing but money^u.

The sac and stricture being laid open and divided, the contained parts come into view, and, according to the different circumstances of the rupture and of the patient, will be found in different states, and require different treatment.

These states are reducible to three general

^u Perhaps it may appear extraordinary, but this necessarily severe operation has, by some of our modern quacks, been recommended, and even practised, for the cure of omental hernias: more than one person has lost his life, that is, has been murdered in the attempt; but that seems to be a circumstance of small importance in the minds of these operators, nor does it at all prevent the credulous part of mankind from trusting them; though one would imagine that much stronger proofs, either of the judgment, humanity, or honesty of such practitioners, were not requisite.

heads, that is, the contained parts will be found, either in a sound, healthy, loose, unconnected state, and fit for immediate reduction; or in a sound state, but, from some particular circumstances, incapable of being immediately replaced; or in an unsound diseased state, and requiring to be treated accordingly.

If the rupture consists of a piece of intestine only, and that neither mortified nor adherent, the sooner it is returned the better, and the more gently it is handled for reduction, the better also.

If the intestine be accompanied with a portion of omentum, the latter (if in a proper state) should be returned first.

In returning the intestine, care should be taken to endeavour to put in that part first which came out last, otherwise the gut will be doubled on itself, and the difficulty and trouble be thereby much increased; and in making the reduction, the fingers should be applied to that part of the intestine which is connected with the mesentery, rather than its convex part, as it will both serve the purpose better, and be less likely to do mischief.

While the reduction is making, the leg and thigh on the ruptured side should be kept elevated, as such position of the limb will much facilitate the return of the parts.

Long confinement in the scrotum will, in some people, produce slight adhesions, by slender filaments, which are generally very easily separated by the finger, or divided by a knife,

or scissors, whether the adhesions be of the parts of the intestine *inter se*, or to the hernial sac. If the adhesion be of the former kind, and such as proves very difficult to separate, it will be better to return the gut into the belly as it is, than to run the risk of producing an inflammation by using force: if it be of the latter, that is, if the connexion be with the sac, there can be no hazard in wounding that, and therefore it may be made free with.

It has been said by some writers, that if the piece of omentum be so very adherent that the surgeon does not choose to separate it, that it may very safely be left, that it will first suppurate, and then shrink, and very little retard the healing of the sore. What experience the gentlemen who talk in this manner may have had of this kind of ease, I know not; but I never yet have seen any, in which it could possibly be thought necessary to leave the patient in such circumstances, or in which an attachment of the omentum was incapable of being set free, either by dissecting its adhesions, or retrenching a part of it.

The prolapsed part being replaced, the next object of consideration is the hernial sac: this, if large, thick, and hard, will prove slow and difficult of digestion, render the edges of the sore tumid and painful, and often retard a cure considerably, by producing troublesome abscesses in the scrotum.

A considerable part of it may very safely and properly be removed: no part of it is of any con-

sequence except the posterior, or that with which the spermatic vessels are connected: all the rest being loose, by means of the cellular membrane, is therefore very easily separable, and had therefore better be removed than left^{*}.

It has been proposed by theoretic writers to pass a ligature round the upper part of the neck of the sac, in order as it is said to procure the union of its sides, and thereby more certainly to prevent the future descent of any thing from the belly; but to this there are

^{*} The removal of part of the sac might have been right when the practice was to fill the cavity with dressings, which induced a necessity for the membranous sac to slough, but was very contrary to Mr. Pott's practice in the latter part of his life; and if he had lived to produce a new edition of this treatise, as he had projected, I have no doubt but that this passage would have been altered. The method which we have long used, and which Mr. Pott himself practised, is this: when the contents of the sac are returned into the abdomen, the sides of the scrotum are brought together, by which means the parts of the divided sac are also brought into contact, a large armed needle is then passed through the upper part of the scrotum near to the abdominal ring, and made to dip down, so as to pass through the sides of the sac, but by no means so deep as to run any risk of including, or even injuring, in the smallest degree, the spermatic vessels, by which mode the objection in the paragraph which follows in the text, is done away; the ligature is then to be tied moderately fast, which makes a powerful barrier against the reprotrusion of the intestine. Two or three stitches, according to the size of the incision, are then to be made through the sides of the divided scrotum: there is no necessity for these to pass through the sac, as the only intention of them is to keep the parts together, so as to prevent the exposure of the sac, by which means no digestion of it will take place, but the parts will coalesce, and generally heal by the first intention. E.

many objections: the principal of which are, that if the ligature was not made strict, it could serve no purpose; and if it was, it would be very likely to injure the spermatic chord, if included in it. By preventing part of the discharge, it might also occasion very troublesome symptoms, and, upon the whole, is by no means advisable.

It has also been supposed, that the intestine may be found so inherent as not to admit of being set free; and in this case it has been advised to remove the stricture, by dividing the sac and the tendon, and then to leave the parts loose. This is mentioned by many writers of eminence, and therefore I have taken notice of it, though it is a kind of case which, I must own, I have never seen, nor do I suppose that I ever shall. I have seen the intestines very firmly adherent to each other, to the sac, to the omentum, and to the testicle; but never in such a state of adhesion, as to be incapable of being returned. The adhesion of the parts of the intestine *inter se*, are most frequently easily separated; but if they should not, still these are no hindrance to the gut being returned; and if the caul be so connected as to prove troublesome to detach, it may with great safety be cut off; so that the connexion here meant must be of the intestine with the hernial sac: of these two parts we are interested only for the preservation of one, and may without hazard make free with the other. The separation may indeed be tedious, and sometimes difficult;

but let the difficulty or trouble be what they may, the separation must be accomplished, it being absurd to think of leaving a piece of intestine loose, in the divided scrotum, which, from the removal of the stricture above, will be liable to be increased in quantity, from every unguarded motion, and subject to all the inconveniences which the influence of the air must necessarily produce on such tender parts; not to mention the great difficulty of managing the sore in this state, and the pain and other bad symptoms which must arise from the daily uncovering the intestine. Any trouble, therefore, which may attend the separation, must be submitted to, rather than to follow this strange advice, which indeed the writers who give seem not to understand; for to leave the parts as they were found, and as they direct, is impossible: they were found contained in a hernial sac, and in the scrotum, defended from the air, and in some degree limited as to quantity, both by the stricture above, and the sac below; the necessary operation has removed that stricture, divided the sac and scrotum, and set all loose and free; and therefore, if the intestine be not returned into the belly, and kept there, the quantity which may fall out may be so large as to produce the most fatal consequences, notwithstanding any attachments which some part of the canal may have contracted.

SECT. VI.

HITHERTO the parts composing a rupture have been considered as displaced, as inflamed, as having contracted unnatural connexions and adhesions, but being still so unhurt in their texture as to remain sound, within the laws of the circulation, fit to be returned into the belly, and affording a reasonable prospect of success in the event.

But, on the other hand, if the inflammation ran very high, and has either been neglected, or not given way to proper treatment, and the operation has been too long deferred, the parts, though loose, may become so diseased, as to be unfit for immediate reduction.

The disease here meant is gangrene, or mortification, produced by the stoppage of the circulation of the blood through the part which is on the outside of the stricture. The gangrenous or mortified state of these parts may be of more or less extent, according to the quantity contained in the sac; but be the extent of such disease what it may, the part so affected ought never to be returned loose into the belly (more especially if it be intestine), without some caution.

The omentum indeed may be made more free with. If this be so altered as to be plainly unfit for immediate reduction, it may be removed;

that is, the altered part may be cut off from the sound.

This is certainly true; but it is a point of practice which appears to me to deserve somewhat more regard than is most commonly paid to it by writers. All that is generally said of it is, that if the omentum be found in an unsound state, a ligature should be made on it just above the altered part: what is below such ligature should be cut off, and the ligature should be left hanging out of the wound, that it may more easily be taken away, when it is cast off. This is the general doctrine, and indeed the general practice; but which I cannot help thinking is delivered down, and followed by us, somewhat inconsiderately.

When the omentum is in such state as to be fit for being returned into the belly, such return ought never to be neglected or omitted; the uses of the caul are great and obvious, and the want of it must be productive of inconvenience to the patient; its warmth, its greasiness, its lubricity, its extension over the surface of the intestines, together with the constant motion of that canal, prove its utility, and in some measure point out what the inconveniences must necessarily be, which follow the removal of it. But it is sometimes found in such state, as to be unfit for reduction; and then we must embrace the lesser of the two evils, and remove such part of it as we ought not to return. This is said by every body, and is certainly true; but seems to me, as I have

just now observed, to require more consideration than is generally spent upon it, as well with regard to the state requiring such operation, as the manner of executing it. It is commonly said, that if it be found in large quantity, considerably hardened, or if it be altered in its texture (that is, by gangrene or mortification), that it ought to be retrenched. The two states said to require this retrenchment are very materially different from each other: the necessity of it in the latter is evident; but I cannot help saying, that I think it is ordered in the former very unnecessarily; and that the general method also of performing it in the latter, appears to me both injudicious and prejudicial. There may possibly now and then occur a case, in which such alteration may have been made in the mere form and consistence of the prolapsed piece, by induration, enlargement, &c. that the removal of a part of it may become necessary; but this, though it does happen sometimes, is very unfit to be made a general rule of. The reason given, is, that it will lie uneasy in a hard lump within the patient's belly; which is not necessarily or generally true, as I have several times experienced; having returned it when its form and consistence have been much altered, without finding any future inconvenience: so that such alteration merely, is not a general reason for cutting it off. On the other hand, I am ready to allow, that it sometimes is, and that the piece of caul so altered had better be removed, and that it may also be so con-

nected, that it will be more to the patient's advantage to have such connected part taken away at once, than go through the pain and fatigue which the separation may require; in which case, my objection lies principally against the prescribed method by ligature. Indeed, when it is in a gangrenous state, a part of it must necessarily be removed, as such state makes the return of it into the belly highly improper. To accomplish this, we are ordered to make a ligature on the sound part of the omentum, just above what is altered, and then to cut it off immediately below such ligature: and the reason given for doing it in this manner is, that all the altered part may be removed without any risk of hæmorrhage. This method of acting is founded on a groundless fear, and is often attended with bad consequences, which, not being supposed to flow from this cause, are not set to its account.

The fear of hæmorrhage from the divided vessels, if the omentum be cut in a sound part, and the apprehension of mischief likely to ensue from the shedding of sanies or matter into the belly, if the division be made in the diseased, gave rise to the practice of tying it before amputation; but neither one nor the other of these apprehensions are well-grounded, nor are they sufficient reasons for such practice.

The fear of hæmorrhage is almost if not perfectly without foundation, as I have several times experienced; and the discharge of a fluid of whatever kind from the border of the divided

membrane, is of no consequence at all; neither would the ligature prevent it if it was, as must appear to every one who will give the subject one moment's serious consideration.

But this is not all: I am sorry to say that I am by experience convinced, that making a ligature on the caul is not only unnecessary, but frequently pernicious, and sometimes even fatal.

A mere theoretical consideration of the parts will convince any one of the probability of mischief arising from such practice; but besides these considerations, I can take upon me to say, that I have seen it add to the hazard of the case, and more than once destroy the patient. I have seen the omentum become diseased, and gangrenous in all its extent above the ligature, between it and the stomach, when it was not gangrenous at all before it was tied; but on the contrary, in a sound state, and only tied in order to its being more securely retrenched. I have seen a whole train of bad symptoms, such as nausea, vomiting, hiccough, fever, anxiety, restlessness, great pain in the belly, and an incapacity of sitting upright, or even of moving without exquisite pain, precede the death of a man, whose omentum was tied merely because of its enlargement, whose intestines uninterruptedly, from the time of the operation to his last hour, performed their proper office of discharging the fæces, and were found perfect and untainted after death, but whose omentum appeared in a highly inflammatory state

in general, and in many parts above the ligature gangrenous.

The direction given by many writers to put the patient's body in motion, or to give him a kind of shake, in order to set to rights the disturbance and derangement produced by tying the caul, would be too absurd to mention, did it not serve to prove, that even the very people who have persisted in this pernicious practice were themselves sensible of some of its probable ill consequences, though they would not try to remedy them: they thought, that those which might follow from hæmorrhage, or the discharge of sanies, were still greater, but made no experiment, in order to know whether they were or not.

I will not pretend to say, that there never was a dangerous or fatal flux of blood, from the division of the omentum, without ligature: but I can truly say that I never saw one; that I have several times cut off portions of it, without tying, and never had trouble from it of any kind, though I have always made the excision in the sound part; and that, from the success which has attended it, I shall always continue to do so, whenever it shall become necessary. Upon the whole, I cannot help thinking the ligature both unnecessary and pernicious, and can venture from experience to say, that any portion of the caul, which it may be thought necessary to remove, may very safely be cut off, without any previous tying.

The best and safest method of performing this

operation, is with a good pair of straight scissors, having first expanded it, as well on account of its more easy divison, as to prevent the mischief which would attend the cutting a piece of intestine, if it should chance to be wrapped up in it; and if any fear still remains of hemorrhage, the excision may, in the case of mortification, be made just within the altered part of it; in which case, there will no more be left to be cast off, than there must be when a ligature is made.

If the gangrene, or sphacelus, have taken possession of the intestine, and consists of a small spot only, which, by casting off, might endanger the shedding its contents into the belly, the method of endeavouring to prevent that inconvenience, is by connecting the upper part to the wound by means of a needle and strong ligature: by this means, when the mortified part separates, the fæces are discharged by the wound for some time; after which it has been known to contract gradually, and heal firmly: but whether the event prove so happy or not, this method of securing the gut should never be omitted.

In making this artificial attachment of the intestine to the inside of the belly, care must be taken not to wound the gut; the needle must be passed through the mesentery, at a small distance from the intestine, and such a portion of that body included within the stitch, as shall be likely to hold fast long enough to render the connexion probable. If the altered portion of the gut be of such extent as to require excision,

but yet not so large as to prevent the extremities of the divided parts from being brought into contact with each other; their union must be endeavoured by suture. In doing this, the ends of the intestine should be made to lay somewhat over each other, by which means the suture will be the stronger; and when the two ends are thus sewed together, they must both be fastened to the inside of the belly, at the upper part of the wound, that in case the union does not take place, the discharge of fæces may, if possible, be made through the groin. But if the disease be of such extent as to prohibit the bringing the two ends together, the treatment must be different. In this case, as it is impossible to preserve the continuity of the intestinal canal, the aim of the surgeon must be to prevent the contents of it from being shed into the belly, and to derive through the wound in the groin all that which should, in a sound and healthy state, pass off by the rectum and anus.

To accomplish this, he must take care that neither extremity of the divided intestine slip out of his fingers; then with a proper needle, and a strong ligature, he must connect both of them to the upper edge of the wound. The suture, with which the connexion is made, must not be slight, lest it cast off before a due degree of adhesion is procured; and it must also be made in such a manner as to preserve the mouth of the gut as free and as open as may be, upon which the patient's small remaining chance does in some measure depend. The method advised by La Pey-

ronie, of stitching the mesentery instead of the intestine, is judicious and right.

The dressing in this case should be as soft and as light as possible, nothing heavy, nothing crammed in, nothing which can irritate or give pain; and the patient must observe the most rigid severity of diet, and the most perfect quietude both of body and mind. With regard to medicine, whatever is exhibited must be calculated to procure rest and ease, to quiet the febrile heat, to keep the body open, and, if necessary (as it most frequently must be), to resist putrefaction. All the rest must be left to nature, who is by her great Creator furnished with such powers, as sometimes to produce wonderful effects, even in these deplorable cases.

This is the substance of the best practice, and of the most approved doctrine, in these circumstances, and which has sometimes been attended with a fortunate event; but the practitioner who is so situated as to see but little of this kind of business, ought to be apprised how very little reason there is to hope for, or to promise success.

More censure is incurred by an unguarded prognostic, than by a successful event, if properly and judiciously foretold; and if a man were to form his judgment upon this, and some other hazardous disorders, from books only, he would expect very little of that trouble and disappointment, which he will most certainly meet with in practice.

Writers in general are too much inclined to tell their successes only, and are fond of relating

cases of gangrene and mortification, in which large portions of intestine have been removed, the proper operations performed with great dexterity, and in which the events proved fortunate; and of this they all give us instances, either from their own practice, or that of others, or perhaps sometimes from imagination; by which the young reader is made too sanguine in his expectation.

That these extraordinary successes do sometimes happen, is beyond all doubt; and it is every man's duty to aim at the same by all possible means: but still the inexperienced practitioner should also be informed, how many sink for one that is recovered, and how many favourable circumstances must concur, with all his pains, to produce a happy event in these very deplorable cases. Without this caution he will meet with very irksome disappointments; and having been often baffled, where he thought he had good reason to expect success, he will sometimes meet with it so very unexpectedly, that he will be inclined to believe the sarcastical distinction between cures and escapes, not ill-founded.

To say the truth, the hazard is so great, and the utmost power of art so little, that what Iapis said to Æneas with relation to his cure, may with great propriety be said here:

*Non hæc humanis opibus, non arte magistra
Proveniunt; neque te Ænea mea dextera servat:
Major agit Deus.*

SECT VII.

THE portion of intestine, or omentum, which composed an hernia, being replaced while sound and unhurt either by inflammation or gangrene, it had always till very lately been supposed, that if a new descent of them were prevented by the immediate application of a bandage, no mischief would be likely to ensue, and that while the truss executed its office properly, the patient would be thereby free from danger.

But within these few years, it has by some of the French writers been said, that the hernial sac may be so loose and unconnected with the spermatic chord, that it may be returned into the belly, while it contains a portion of intestine, labouring under a stricture made by the neck of the said sac; and of this they have given instances of cases—or of what appeared to them to be so.

Mr. Le Dran tells us, that in one of these, the rupture was with some difficulty returned, but the symptoms nevertheless continuing, the patient died; and that upon opening the body he found the hernial sac, including a considerable portion of intestine, returned into the belly; and that the stricture made by the neck of the sac, bound so tight, that he could not disengage the gut from it without cutting it.—His words are :—

“ Nous trouvames dans le ventre le sac her-
 “ niare, qui avoit trois pouces de profondeur,
 “ sur huit pouces de circonference, et dans ce
 “ sac etoit encore enfermée une demie aulme de
 “ l'intestine jejunum. Tenant le sac á plein
 “ main, je voulus en faire sortir l'intestin, en le
 “ tirant par l'un de bouts; mais la chose me fut
 “ impossible, tant l'entrée du sac etoit resserrée,
 “ & je n'en vins au bout, qu'en dilatant cette
 “ entrée avec les ciseaux,” &c.

In De la Faye's notes on Dionis may also be seen an instance of this kind of case, or at least of what was taken for such.

I have already given my opinion concerning the practicability of returning a hernial sac back into the abdomen, after it has been out any considerable length of time. I never saw, either in the dead or the living, any reason to suppose it possible: the assertions of these gentleman are very positive, and I must leave the reader to judge of them as he can.

The straitness of the neck of the sac is supposed to be produced by the pressure of the bolster of a truss, worn to keep the parts from descending. This part of the supposition is probable: but it must also be considered, that the same pressure must almost necessarily occasion adhesions of the outside of the sac to the surrounding cellular membrane; and if we were to suppose the sac loose and unconnected in every other part (a thing I must own I never saw), yet this alone would for ever prevent its return into the belly.

It is indeed represented as a circumstance not very frequently occurring, which is fortunate for mankind; as it can neither be foreseen nor prevented, and would add considerably to the hazard of ruptures.

It is said, that by carefully attending to the manner in which a rupture goes up, we may distinguish whether the sac returns with it or not; that if it does, including the gut, a hard body will be perceived to pass under the finger, and that the intestine in its passage through the abdominal opening, will not make that kind of guggling noise which it is usually found to do, when the sac does not return with it. This, instead of being the characteristic mark of the return of the sac, will almost always be found to be the case when a portion of omentum, which has been much compressed, goes up at the same time with the gut; and therefore, however ingenious this observation may seem, considered theoretically, it is not to be depended upon in practice.

But supposing we had some clear and undoubted marks, by which we could always know when this was the case, I do not see how we could avail ourselves of them: the intestine must be returned before we can have our information; and if instead of the uncertain, delusive reasons just given, we had the clearest and most satisfactory marks of what is suspected, we have no remedy, but a very perplexing, tedious, and painful operation, which, I fancy, as

few surgeons would in these circumstances choose to perform, as patients submit to.

I call these marks or symptoms, which these gentlemen have given us, doubtful and delusive, because they do not with any degree of certainty indicate the cause to which they are owing, or from which they arise; for the inflammation excited in the intestine by its having been engaged for some time in a stricture, will sometimes produce all the same complaints after its return: but no chirurgical operation will relieve them.

In the common reduction therefore of an intestinal rupture by the hand, I do not see how we can avail ourselves of this supposed discovery; and when the operation by the knife becomes necessary, it can be of no consequence at all; for if the operation be properly performed, the hernial sac will be divided through its whole length, before the instrument reaches the tendon; and therefore the gut can never be returned, while bound by any stricture from the former.

It has indeed been said, that till this discovery was made, the stricture of the abdominal tendon, and the adhesion of the contents of the hernial sac to its sides, were the only known reasons why any rupture should be irreturnable; and that when such case occurred, if the tendon only was divided, and the sac reduced unopened, the patient might be lost, notwithstanding all that had been done. To this I can only say, that a stricture made by the sac only, is far from being

a thing unknown, and is one of the principal reasons why all judicious writers and practitioners have advised it to be always divided; and when this is properly executed, no such consequences can follow, even if the hernial sac should be (what I have never yet seen) capable of being returned into the belly.

SECT VIII.

RUPTURES through the openings of the tendons of the oblique muscles in females, are subject to the same symptoms, and require nearly the same general treatment, as the inguinal ruptures of males; and, like them, frequently admit of perfect cure, if not mismanaged or neglected at first: the same kind of truss is also necessary, and the same cautions with regard to the manner of wearing it.

The open texture of the cellular membrane surrounding the spermatic vessels, and the laxity of the scrotum, render the hernial tumor much larger in males than it can well be in females: neither can it descend so low in the latter, as it does frequently in the former, for reasons which are obvious.

The female hernia, if recent, has much the same appearance as the bubonocoele in man; and when more of the gut or caul is thrust forth than will lie conveniently in the groin, it pushes down into one of the labia

pudendi, and sometimes forms a tumor of pretty considerable size.

When easily reducible, like that of men, it gives but little pain, and generally returns into the belly upon going to bed, or upon the patient being laid in a supine posture. When it is bound by the opening of the abdominal tendon, and is therefore difficult, or incapable of reduction, it is attended with the same symptoms as the incarcerated hernia in man, and requires the same general treatment, of bleeding, clysters, purges, warm bath, &c. and (these failing) the chirurgic operation; by which the hernial sac is laid open, and the stricture made by the tendon, divided.

In males, the cellular membrane which surrounds the spermatic vessels and the hernial sac, is generally so thickened by distention, as to take some little time to cut through, and proves thereby a kind of security to prevent the sac from being too hastily opened; but in females it should be remembered, that the hernial bag lies immediately under the membrana adiposa, and requires to be very cautiously divided, on account of its contents: nor have I in general observed the fluid contained in the hernial sac of females to be equal to that which is found in males.

The piece of intestine which is strangulated in the female bubonocoele, is sometimes so small, as to occasion very little tumor, and therefore, if recent, is very often, in modest women, not known to be the cause of the symptoms which it produces. If by accident it returns back before it is hurt in its

texture, the disease passes for a colic; if it proves fatal by mortification, it is taken for a *passio iliaca*, or *miserere*. The means made use of for the relief of either of those diseases, being such as will not, in general, without the assistance of a surgeon's hand, procure a return of the protruded gut, many an useful life has been lost by the real cause of the mischief not being known. Every symptom (the tumor excepted) which accompanies a rupture labouring under stricture, may attend a *passio iliaca*; that is, an inflammation and obstruction to the execution of the office of the intestine, whether produced by the stricture of the abdominal tendon, or the spasmodic contraction of its own muscular fibres, will be attended with the same kind of symptoms: but though the general means of relief are alike in both cases, yet the former requires also the assistance of a surgeon's hand to replace the piece of intestine, or all the rest will be absolutely ineffectual: if that be neglected, the case in general will end ill, and though the mischief is set to another account, and supposed to have been without remedy, yet it is very certain that timely assistance would very frequently prevent such bad consequences. It therefore behoves every medical man, who may be called to women labouring under such complaints, to be very attentive to them; and if the symptoms run high, never to omit inquiring whether there be any tumor in the groin, belly, or pudenda; and if there be such, to be informed of what nature it is, before he goes any further, or

loses any more of that time, which in all these cases is so very precious.

In the case of the dolor colicus, the pain is either round about the navel, or diffused in general all over the belly: that arising from a strangulated rupture is also very frequently general all over the belly, but is always more particularly acute at the groin, which part is also remarkably tender to the touch. The tension of the belly, and the vomiting in the passio iliaca, are in general the first, at least they are very early symptoms; whereas they do not come on in ruptures, till after some time is past. Perhaps some other minute distinctions might be made between the apparently similar symptoms of the two diseases: but the best and most infallible way to know what the real state of the case is, and thereby what ought to be done, is to have the parts examined where such tumor may be expected. This removes all doubt, and gives the practitioner the satisfaction of knowing, that, let the consequence be whatever it may, he is pursuing a rational and probable method of relieving his patient.

SECT. IX.

THE crural, or femoral hernia, receives its name from its situation, the tumor occasioned by it being in the upper and fore part of the thigh.

To understand rightly the nature and situa-

tion of a crural rupture, it is necessary to attend to the anatomical structure and disposition of the obliquus descendens muscle of the abdomen. Whoever does this, will find that that part of it which runs obliquely downward from the spine of the os ilion, towards the symphysis of the os pubis, is tucked down, and folded inward, as it were. This edge or border, so folded in, is what is called the *ligamentum Poupartii* by some, by others the *ligamentum Fallopii*, as if it was a distinct and separate body, but is really no more than the inferior border of the tendon of the oblique muscle. In all the space between these two attachments, this tendon is loose and unconnected with any bone. All the hollow, which is made by the form of the os ilion, between the point of the attachment of the ligament or tendon to that bone, and its other connexion at the os pubis, is filled up by cellular membrane, fat, and glands; which parts are covered, and braced down, by a fine tendinous expansion, communicating between the tendon of the obliquus descendens abdominis and the fascia lata of the thigh.

Under this tendon, or ligament, the parts composing a hernia pass, and produce a tumor on the upper and fore part of the thigh. The sac is generally described as passing over the crural artery and vein, which are said to lie immediately behind it; but whoever will examine the state of these parts in a dead subject, will find that this is not a true representation: the descent is made on one side of these vessels, nearer to the os

pubis; and the hernial sac, if it be not greatly distended, lies between the crural vessels and the last mentioned bone, on which it rests.

The femoral hernia is not so subject to stricture as the inguinal, there being a larger space for the intestine to occupy: but when such mischief does happen, the symptoms are so exactly the same as they are in a strangulated inguinal hernia, that it is quite unnecessary to repeat them in this place. The method of attempting reduction, and the treatment of the patient in case of difficulty, are the same also; excepting that in the inguinal, the part to be reduced should be pressed obliquely toward the os ilion; in the femoral, the pressure ought to be made directly upward, or a little toward the pubes.

When it is not reducible by the hand only, it, like the other, becomes the object of a chirurgic operation, by which the sac is laid open, the stricture removed, and the prolapsed parts returned.

The incision should be made through the skin, and membrana adiposa, the whole length of the tumor: under these will be seen the tendinous fascia, or expansion, and immediately under that the hernial sac. These being carefully divided, and the portion of intestine thereby denuded, it is well worth while to try if it cannot be returned without dividing the tendon, as there is a considerable space between the os ilium and the os pubis, to manage such reduction in, and as the division of the tendon is not always, in this kind of rupture, so safely executed. In this there are

two parts of consequence, which lie very little out of the way of the knife, and which an operator should avoid wounding: these are the epigastric artery, and the spermatic chord. If the division of the ligament be made directly upward, the spermatic chord will certainly be divided; and if, to avoid that, the knife be carried very obliquely towards the os ilium, the artery will meet with the same fate; and indeed if the incision of the ligament be made of any length, let it be made in whatever part it may, the risk will be great of wounding one of the parts just mentioned, as will appear to any body who will examine them *in situ naturali*, and make a proper allowance for the pressure and distention of the hernial sac.

Of the two, the spermatic chord is certainly the most to be regarded, as the total division of it would in all probability render the testicle on that side useless. If the artery be wounded, it must be taken up with a needle and ligature; but the doing is not so easy as the directing it to be done: the epigastric artery in many men is near as large as the smaller carpal; departs immediately from the trunk of the crural, and, at its origin, lies in a bed of fat and cellular membrane; the stream of blood would be pretty brisk, and the passage of the needle round would certainly be troublesome, if not hazardous, from the vicinity of the crural vessels. It may undoubtedly be happily executed; but as it must be attended with a good deal of trouble, and some risk, it is much better to avoid the necessity, which I

think may always be done, considering the large space between the os ilion and the os pubis, and that the space is occupied principally by cellular membrane and fat: or if the division of the ligament be unavoidable, let the operator be particularly careful to keep the extremity of the probe-pointed knife within the end of his fore-finger, held up tight just behind the edge or border of the tendon, and to make as small an incision as may be necessary: the probe-scissors, the common instrument in use for this operation, is in this case particularly hazardous and improper.

In all other circumstances, this hernia, and the inguinal, are so similar as to need no repetition.

SECT. X.

THE CONGENIAL HERNIA.

THE *congenial hernia*, as it is now called, is that particular kind of hernia, in which the portion of intestine, or omentum, which occasions the tumor, instead of being found alone in the hernial sac (as in a common rupture), is found in contact with the naked testicle; the bag containing it being formed by the *tunica vaginalis testis*.

The manner in which a common hernial sac is formed, has already in a former chapter been related, *viz.* by the thrusting forth of a portion of the peritoneum through the opening in the tendon of the external oblique muscle of the abdomen; which portion, so thrust forth, contains a piece of intestine, or omentum, or both. A her-

nial sac thus formed always communicates with the cavity of the belly, but never with that of the tunica vaginalis testis. It passes down anterior to the spermatic chord; and when it is laid open is found to contain only a portion of gut, or caul, and a small quantity of fluid.

On the contrary, the sac of a congenial hernia is formed by the tunica vaginalis testis itself; and when it is laid open (whatever else may be in it), it is always found to contain the testicle, covered only by its proper coat, commonly called tunica albuginea.

The manner in which this is brought about, the original or early situation of the testes in a foetus, their descent, their protrusion from the cavity of the belly, and the formation of the tunica vaginalis testis, I have described so much at large in two tracts already published^z, that I shall give a very short account of them in this place.

That bag which is designed to make the future tunica vaginalis testis, is an originally-formed part, lies in the groin, under the skin and adipose membrane, and has an orifice always open to the abdomen of a foetus. By means of this orifice, the testicle at proper time descends into the groin first, and then most commonly into the scrotum; and when it has been some little time in the latter, the opening from the belly

^z An Account of the Congenial Hernia, published in 1757; and some Observations on the Hydrocele, published in 1762. In Dr. Hunter's Medical Comment, No. 1, may also be seen a very ingenious account of this matter, by his brother Mr. John Hunter.

generally becomes close, and is obliterated. By the closing of this passage, a bag or cavity is formed, which contains within it the testicle, covered only by its tunica albuginea, and which bag never afterward has any communication with the orifice into the cavity of the belly.

The time at which the testicles are thrust forth from the belly is very uncertain, as I have often experienced; and so is that of the absolute closing of the sacculus. In some they pass out before birth, in some immediately after, and in some not till some time after; in some they never pass out at all, and in others, they (that is, the two) arrive in the groin, or scrotum, at different, and sometimes very distant times. In short, the intention of nature, and her process, is in general regular and plain, but it is accomplished at different periods in different persons, and sometimes, like most other parts of the animal economy, it is totally prevented by accident, or mal-formation.

The intrusion of a piece of intestine or omentum into the orifice of the tunica vaginalis is one of these accidents. By means of either of these, the closing of the passage is prevented, and a hernial sac of a particular kind formed. This sac being really the vaginal coat of the testis, must, if that body has fallen from the abdomen, contain the intestine, omentum, or whatever forms the hernia and the testicle in immediate contact with each other.

This is the congenial hernia; a disease unknown till within these few years, but by no means an infrequent one.

The appearance of a hernia in very early infancy, will always make it probable that it is of this kind; but in an adult, there is no reason for supposing his rupture to be of this sort, but his having been afflicted with it from his infancy: there is no external mark or character, whereby it can be certainly distinguished from one contained in a common hernial sac; neither would it be of any material use in practice if there was.

When returnable, it ought like all other kind of ruptures to be reduced, and constantly kept up by a proper bandage; and when attended with symptoms of stricture, it requires the same chirurgic assistance as the common hernia.

In very young children, there are some circumstances relative to this kind of rupture, which are very well worth attending to, as they may prove of very material consequence to the patient.

A piece of intestine, or omentum, may get pretty low down in the sac, while the testicle is still in the groin, or even within the abdomen, both which I have seen. In this case, the application of a truss would be highly improper; for in the latter, it might prevent the descent of the testicle from the belly into the scrotum: in the former it must necessarily bruise and injure it, give a great deal of unnecessary pain, and can prove of no real use. Such bandage therefore ought never to be applied on a rupture in an infant, unless the testicle can be fairly felt in the scrotum, after the gut or caul is replaced; and

when it can be so felt, a truss can never be put on too soon.

As this kind of rupture is subject to stricture with all its consequences, as much as that which is contained in a common hernial sac, and therefore liable to stand in need of the chirurgic operation; it may be very well worth an operator's while to know, that an old rupture, which was originally congenial, is subject to a stricture made by the sac itself, independent of the abdominal tendon, as well as to that made by the said tendon.

Whether this be owing to the weight of the testicle at the bottom of the sac, and the endeavours which nature makes to close the upper part of the tunica vaginalis, or to what other cause, I will not pretend to say; but the fact I have several times noticed, both in the dead and in the living. I have seen such stricture made by the sac of one of these herniæ, as produced all those bad symptoms which render the operation necessary; and I have met with two different strictures, at near an inch distance from each other, in the body of a dead boy about fourteen, one of which begirt the intestine so tight that I could not disengage it without dividing the sac.

In this kind of hernia I have also more frequently found connexions and adhesions of the parts to each other, than in the common one; but there is one kind of connexion sometimes met with in the congenial hernia, which

can never be found in that which is in a common hernial sac, and which may require all the dexterity of an operator to set free; I mean that of the intestine with the testicle, from which I have more than once experienced a good deal of trouble.

When a common hernial sac has been laid open, and the intestine and omentum have been replaced, there can be nothing left in it which can require particular regard from the surgeon; but by the division of the sac of a congenial hernia, the testicle is laid bare, and after the parts composing the hernia have been reduced, will require great regard and tenderness, in all the future dressings, as it is a part very irritable, and very susceptible of pain, inflammation, &c.^a

If a large quantity of fluid should be collected in the sac of a congenial hernia, and, by adhesions and connexions of the parts within, the entrance into it from the abdomen should be totally closed (a case which I have twice seen), the tightness of the tumor, the difficulty of distinguishing the testicle, and the fluctuation of the fluid, may occasion it to be mistaken for a common hydrocele; and if without attending to other circumstances, but trusting merely to the feel and look of the scrotum, a puncture be

^a The method of bringing the parts together, and retaining them so as to exclude the air (mentioned in a note, page 90 of this volume), is equally applicable to cases of congenial herniæ; and as it will prevent the exposure of the testis, all future dressings of it will be unnecessary.

hastily made, it may create a great deal of trouble and possibly do fatal mischief.

By what has fallen within my observation, I am inclined to believe that the sac of a congenial hernia is very seldom, if ever, distended to the degree which a common hernial sac often is: it also, from being less dilated, and rather more confined by the upper part of the spermatic process, generally preserves a pyriform kind of figure, and, for the same reason, is also generally thinner, and will therefore require more attention and dexterity in an operator when he is to open it. To which I believe I may add, that common ruptures, or those in a common sac, are generally gradually formed; that is, they are first inguinal, and by degrees become scrotal: but the congenial are seldom, if ever, remembered by the patient to have been in the groin only.

SECT. XI.

EXOMPHALOS.

THE Exomphalos, or Umbilical rupture, is so called from its situation, and has, like the other, for its general contents, a portion of intestine, or omentum, or both. In old umbilical ruptures, the quantity of omentum is sometimes very great.

Mr. Ranby says, that he found two ells and

half of intestine in one of these, with about a third part of the stomach, all adhering together.

Mr. Gay and Mr. Nourse found the liver in the sac of an umbilical hernia; and Bohnius says that he did also.

But whatever are the contents, they are originally contained in the sac, formed by the protrusion of the peritoneum.

In recent, and small ruptures, this sac is very visible; but in old, and large ones, it is broken through at the knot of the navel, by the pressure and weight of the contents, and is not always to be distinguished; which is the reason why it has by some been doubted whether this kind of rupture has a hernial sac or not.

Infants are very subject to this disease, in a small degree, from the separation of the funiculus; but in general they either get rid of it as they gather strength, or are easily cured by wearing a proper bandage. It is of still more consequence to get this disorder cured in females, even than in males, that its return when they are become adult, and pregnant, may be prevented as much as possible; for at this time it often happens, from the too great distention of the belly, or from unguarded motion when the parts are upon the stretch. During gestation it is often very troublesome; but after delivery, if the contents have contracted no adhesion, they will often return, and may be kept in their place by a proper bandage.

If such bandage was always put on in time, and

worn constantly, the disease might in general be kept within moderate bounds, and some of the very terrible consequences which often attend it might be prevented. The woman who has the smallest degree of it, and who from her age and situation has reason to expect children after its appearance, should be particularly careful to keep it restrained.

In some the entrance of the sac is large, and the parts easily reducible; in others they are difficult, and in some absolutely irreducible. Of the last kind many have been suspended for years in a proper bag, and have given little or no trouble. They who are afflicted with this disorder, who are advanced in life, and in whom it is large, are generally subject to colics, diarrhœas, and, if the intestinal passage be at all obstructed, to very troublesome vomitings^b. It therefore behoves such to take care to keep that tube as clean and free as possible, and neither to eat or drink any thing likely to make any disturbance in that part.

The cure, as proposed by authors, is either radical or palliative.

Celsus, Paulus Ægineta, Albucasis, Aquapendens, Guido, Severinus, Rolandus, and others, mention a radical cure by ligature: Fab. ab Aquapendente proposes, “aut medicamentis
“aut ferro umbilicum adurere;” but after having described both methods, he lays them under such restraints, from age, habit, size of the tumor, time of the year, &c. as amounts

^b On which account they are often supposed to labour under a stricture of the intestine, when they really do not.

almost to a prohibition against putting them in practice at all; and it is to be hoped that nobody will attempt to revive them.

The methods by ligature are two; in the one, the skin covering the tumor is to be lifted up with the finger and thumb, or with a small hook to free it from the intestine underneath; and then a ligature is to be made round the basis of the tumor, so strict as to procure a mortification of all that part which is anterior to such ligature. In the other, the skin is to be elevated in the same manner, and a needle armed with a double ligature is to be passed through the basis of the tumor, which is to be tied above and below, or on each side, so tight as to produce the same effect. Previous to the drawing the ligature close, it is advised to make a small incision in the top of the tumor, large enough to pass in the end of the fore-finger, and with it so to depress the intestine or omentum, as to prevent their being engaged in the stricture.

The intention in both these methods is the same; *viz.* by destroying the lax skin covering the top of the tumor, to produce a cicatrix which shall bind so tight, as to restrain the parts from any future protrusion.

The objections to either of them are so obvious, that it is hardly necessary to say any thing concerning them; though in this age of quackery and credulity, I should not wonder to see them revived and practised.

In young subjects, and small herniæ, a ban-

dage worn a proper time generally proves a perfect cure; and in old persons, and large tumors, it is hardly to be supposed that any body can think of any, but a palliative one, the hazard of producing a mortification being so great.

But suppose the subject to be young, and the tumor of such size, and in such state, as to make it unlikely that a bandage would do more than palliate; that the skin covering the tumor is so lax, as to make it improbable that it should ever recover its former state, and lie smooth; and that, when it has been removed, the cicatrix shall bind so tight, as to prevent the future protrusion of any of the contained parts; yet who can tell what may be the consequence of this destruction of parts, and this indilatibility of the skin in a state of pregnancy? I mention this, because I have seen very terrible mischief from the bursting of a cicatrix on the navel, during gestation; though the scar was from an abscess, opened by incision, and consequently could not be supposed to be equal, either in size or resistance, to one produced by the fore-mentioned operation.

The umbilical, like the inguinal hernia, becomes the subject of chirurgic operation, when the parts are irreducible by the hand only, and are so bound as to produce bad symptoms. But though I have in the inguinal and scrotal hernia advised the early use of the knife, I cannot press it so much in this; the success of it is very rare, and I should make it the last remedy. Indeed, I am much inclined to believe, that the bad symptoms

which attend these cases, are most frequently owing to disorders in the intestinal canal, and not so often to a stricture made on it at the navel, as is supposed. I do not say that the latter does not sometimes happen—it certainly does; but it is often believed to be the case when it is not.

When the operations become necessary, it consists in dividing the skin and hernial sac, in such manner as shall set the intestine free from stricture, and enable the surgeon to return it into the abdomen, if found, and not adherent; but if it be gangrenous, or mortified, the altered part must be removed, and the fæcal discharge be derived through the wound; by which means, some few have preserved their lives, if such state can be called living.

SECT. XII.

VENTRAL HERNIA, &c.

THIS may appear in almost any point of the fore part of the belly, but is most frequently found in or between the recti muscles.

The portion of intestine, &c. is always contained in a sac, made by the protrusion of the peritoneum. When reduced, it should be kept in its place by bandage; and if attended with stricture, which cannot otherwise be relieved, that stricture must be carefully divided.

The hernia foraminis ovalis, I have never seen^c.

All the parts almost, which are contained in the belly or pelvis, are, by the dilation of their connecting membranes, capable of being thrust forth, and of producing swellings, all which are called herniæ.

Ruysch gives an account of an impregnated uterus being found on the outside of the abdominal opening; and so does Hildanus and Sennertus. Ruysch also gives an account of an entire spleen having passed the tendon of the oblique muscle. And I have myself seen the ovaria removed by incision, after they had been some months in the groin.

The urinary bladder is also liable to be thrust forth, from its proper situation, either through the opening in the oblique muscle, like the inguinal hernia, or under Poupert's ligament, in the same manner as the femoral.

This is not a very frequent species of hernia, but does happen, and has as plain and determined a character as any other.

It has been mentioned by Bartholin, T. Dom. Sala, Platerus, Bonetus, Ruysch, Petit, Mery, Verdier, &c. In one of the histories given by the latter, the urachus, and impervious umbilical

^c Since Mr. P. wrote this, he informed me that he had seen two cases of this kind, one in a man, another in a woman; in both, the parties suffered great pain when the intestine was protruded, as it frequently was to the size of a hen's egg, but by lying in a horizontal posture, and a gentle pressure being made, it receded. E.

artery on the left side, were drawn through the tendon into the scrotum, with the bladder; in another he found four calculi.

Ruysch gives an account of one complicated with a mortified bubonocoele. Mr. Petit says he felt several calculi in one, which were afterwards discharged through the urethra.

Bartholin speaks of T. Dom. Sala as the first discoverer of the disease, and quotes a case from him in which the patient had all the symptoms of a stone in his bladder: the stone could never be felt by the *sound*, but was found in the bladder (which had passed into the groin) after death^d.

As the bladder is only covered in part by the peritoneum, and must insinuate itself between that membrane and the oblique muscle, in order

^d Many years ago a boy about ten years of age, was shown to Mr. Pott with a hard incompressible tumor in the upper part of the scrotum on the right side, which gave little pain except when pressed on. To determine positively its nature and contents was certainly a matter of no little difficulty. It however occurred to me that it might be a hernia of the bladder including a stone. Mr. Pott made an incision through the skin and cellular membrane on the upper part of the tumor, which now being denudated, more plainly appeared to be what I had suspected. Mr. Pott then drew it forward and divided the neck, when a stone of the size of a very large nutmeg was detached covered with the bladder, except at the upper part, which was left bare from the elastic retraction of the bladder. Some urine followed, and continued to come away in smaller and smaller quantities through the opening, till it completely closed, which happened in a few days—without any adverse symptoms, the boy got perfectly well. The stone with its covering of bladder is now in my possession. E.

to pass the opening in the tendon, it is plain that the hernia cystica can have no sac, and that, when complicated with a bubonocoele, that portion of the bladder which forms the cystic hernia must lie between the intestinal hernia and the spermatic chord; that is, the intestinal hernia must be anterior to the cystic.

A cystic hernia may indeed be the cause of an intestinal one; for when so much of the bladder has passed the ring, as to drag in the upper and hinder part of it, the peritoneum which covers that part must follow, and by that means a sac be formed for the reception of a portion of gut or caul. Hence the different situation of the two herniæ in the same subject.

While recent, this kind of hernia is easily reducible, and may, like the others, be kept within by a proper bandage; but when it is of any date, or has arrived to any considerable size, the urine cannot be discharged, without lifting up, and compressing the scrotum: the outer surface of the bladder is now become adherent to the cellular membrane, and the patient must be contented with a supensory bag.

In the case of complication with a bubonocoele, if the operation becomes necessary, great care must be taken not to open the bladder instead of the sac, to which it will always be found to be posterior. And it may also sometimes by the inattentive be mistaken for a hydrocele, and by being treated as such, may be the occasion of great or even fatal mischief.

SECT. XIII.

ATTEMPTS TOWARDS A RADICAL CURE.

IN the first section of this treatise I have said, that the means used to obtain both a palliative and a radical cure were exactly the same, and the event was dependent on many circumstances, which a surgeon could neither direct nor alter; such as the age of the patient, the date of the hernial sac, the size of the abdominal openings, &c.

They who are unacquainted with the true nature of this disease may possibly be surprised at this assertion, and be thereby induced to believe, what has in all times been so confidently asserted, *viz.* that there are methods and medicines whereby this disease may always be perfectly cured; and that the surgeons, either through indolence will not get information of them, or through obstinacy will not practise them. If either of these charges was true, it must be the latter, for we certainly do know what attempts of this kind have been made; and if any of these means had really deserved the character which has been given of them, had been safely practicable, or had proved generally successful, I should certainly have spoken of them in their proper place: but this is so far from being the case, that, on the contrary, however they may

have been applauded by a few individuals, they have, upon repeated experiment, been found unfit for general practice, being either totally inefficacious, or painfully mischievous. The majority, nay, almost all they who have submitted to, or tried them, have remained uncured of their disease, or have been mutilated or murdered in the attempt.

Several of these methods have indeed the sanction of antiquity, and have been described and even practised by many of the old surgeons: the principal of these, or they which are most worthy of notice, are the *cure by cautery*; the *cure by caustic*; that *by castration*; the *punctum aureum*; the *royal stitch*; and the *cure by incision*.

In Avicenna, Albucasis, Paulus Ægineta, Fab. ab Aquapendente, Guido, de Caliacco, Severinus, Theodoric, Rolandus, Serjeant Wiseman, and others, will be found the *cure by cautery*, which is performed as follows:

After a proper time spent in fasting and purging, the patient must be put into an erect posture, and by coughing, or sneezing, is to make the intestine project in the groin as much as possible; when the place and circumference of such projection is to be marked out with ink. Then the patient being laid on his back, the intestine is to be returned fairly into the belly, and a red-hot cautery is to be applied according to the extent of the marked line. For this purpose, cauteries of different sizes, shapes, and figures, have been devised; annular, elliptical, circular, like the Greek letter Gamma, &c. The writers

who have given an account of this operation, have differed a good deal from each other, not only in the size and figure of the cautery, but in depth of its effect. Some have directed it to be repeated, so as to denude the os pubis; others direct that the skin only be destroyed by the iron, the cellular membrane, sac, periosteum, &c. with repeated escharotic applications. But in all of them the exfoliation^e of the bone is made a necessary part of the process. The eschar and sloughs being separated, and the exfoliation cast off, the patient is ordered to observe an extremely strict regimen, to lie on his back during the cure, and to wear a bandage for some time after, in order to prevent a new descent of the parts, which notwithstanding all the pain, and all the hazard the patient had undergone, he was still liable to.

The cure by caustic seems to have succeeded to that by cautery, and is described by most of the same writers, particularly by Guido, Severinus, Lanfranc, Parey, Theodoric, Scultetus, &c.

The patient being laid on his back, and the parts returned into the belly, a piece of caustic is to be applied on the skin, covering the open-

^e Albucasis says, “ Et scias quod quando tu non consequeris os cum cauterio, non confert operatio tua.”

Rolandus orders the cautery to be used in the same manner; so do Guido, Theodoric, &c.

Brunus says, “ Si non fuerit os consecutum, in primâ vice, tunc iterâ cauterium vice aliâ donec consequeris; quia si non consecutum fuerit os, cum cauterio, parum confert operatio tua.”

ing in the abdominal tendon, so large as to produce an eschar, about the size of half a crown.

Some suffer this eschar to separate, others divide it, and then, by the repeated applications of escharotics, destroy the membrana cellularis, with as much of the hernial sac as can be done without injuring the spermatic vessels. For this purpose different kinds of corrosive applications have been made use of: pastes loaded with sublimate or arsenic; the stirpes brassicæ, burnt; the tithymalus; the lapis infernalis alone, or with suet and opium; oil of vitriol; with many others, according to the humour of the operator. But though the means are somewhat different from each other, the end or intention in the use of them all is the same, *viz.* to remove or destroy the skin and cellular membrane covering the tumor, together with a part of the hernial sac, and by that means to procure such an incarnation, as by its firmness, and its attachment to the bone and parts adjacent, shall prevent a new descent of either gut or caul.

The mere relation of one of these methods is sufficient to shock any humane or ingenuous man. The horror attending the use of the cautery must be great, to say nothing of the extreme uncertainty of the size or depth of the eschar: the apprehension from the caustic will be less, indeed, but the pain must be nearly as great, and of much longer duration.

The parts to be destroyed are, as I have just said, the skin, the membrana adiposa, part of the hernial sac, and the periosteum covering the

os pubis; and this is to be accomplished without injuring the spermatic vessels, or the tendon of the abdominal muscle.

If the spermatic vessels are hurt, an inflamed or diseased testicle will be the consequence: if they are destroyed, the testicle will become useless. If the tendon of the oblique muscle be injured, either by the iron, or by the caustic, terrible sloughs, a large ill-conditioned sore, and a brisk symptomatic fever, must be expected, which in some habits must be productive of considerable mischief: and that considerable mischief was often done by these processes, may be learned from the very writers who describe them^f.

If the os pubis be laid bare, whether by cau-

^f Guido speaking of the cure by caustic says, “ In quo
“ summe cavendum est, quod dominus sit de corrosivo; si
“ enim indocte applicatur, febrim commovet, et accidentia
“ mala.” That great pain, defluxion on the hæmorrhoidal
vessels, and inflammation and swelling of the scrotum, were
often the consequence of these attempts, may be learned from
the same author, who, speaking of the method of applying
the caustic, says, “ Et ita continue fiat quousque caro miracis
“ tota sit corrupta, usque ad Didymum, quod cognoscitur per
“ inflationem bursæ, et testiculorum.” And that the caustic
has gone deep enough, he gives the following proof:
“ Quod cognoscetur per majorem tumorem testiculi et per
“ majorem dolorem dorsi et partium posteriorum.” Brunus
says, “ Et cave summâ diligentîâ, ne in horâ cauterizationis
exeat intestinum, et comburatur.” Lanfranc, speaking of
the ill effect of the caustic in some habits, says, “ Et sic multi
spasmanur, et spasmati subito moriuntur.” Fab. ab Aqua-
pendente says, “ Quæ tamen chirurgiæ uti videtis, difficiles
“ admodum sunt, et inter subtilissimas haberi possunt; quo
“ fit ut plerique patientes affectus perpetuo gestare quam his
“ chirurgis submittere se vellent.” And in another place,
“ Quæ porro chirurgiæ vehementem dolorem afferunt et satis

tery or by caustic, some of the before-mentioned hazards must be incurred; if it be not, the intention will in general be frustrated; that is, the intestine will slip down behind the scar, and put the patient under the same necessity of wearing a bandage, as he lay under before he submitted to so painful and so hazardous an experiment.

If the preservation of life was the object of these means, something might be said in their vindication; the *anceps remedium* must for ever be preferable to desperation: but that is not the case: they are recommended to be put in practice, when the patient's life is in no kind of danger, and are designed merely to save him the trouble of wearing a truss, which purpose they can seldom answer; for it is well known, that after the use of the cautery, caustic, and every method, either proposed for a radical cure, or used to rescue a ruptured patient from death, that the intestine will slip down behind the cicatrix, and form a new bubonocoele, which can only be kept up by a proper bandage.

The three other means made use of by the ancients toward obtaining a radical cure, were the *punctum aureum*, the royal stitch, and castration.

The *punctum aureum* was performed as follows:—The intestines being emptied by purging and the hernia reduced, an incision was made

“*difficiles sunt.*” In short, whoever will take the trouble of reading the old writers on this subject, will, even from their own account, be satisfied, of the pain, hazard, and inefficacy of all these methods.

through the skin and membrana adiposa, down to the spermatic process. This incision was to be of such length, as to permit the operator, either with his finger or with a hook, to take up the said process, and to pass a golden wire under it; which wire was to be twisted in such a manner as to prevent the intestine from slipping down again into the hernial sac, but not so tight as to intercept or obstruct the circulation of the blood to the testicle. Some operators preferred a leaden wire to a golden one, and others a silken ligature.

It may possibly seem rather uncivil to say, that both this and the succeeding operation were directed and practised by people who were very little acquainted with the true nature and structure of the parts they operated upon, or indeed of the disease for which they prescribed such operation: but had not that been the case, they never could have proposed so fallacious and uncertain a method of treating it; for if the wire or whatever was passed round the process did not bind pretty tight, it would not prevent a descent of the gut; and the whole operation, though painful and irksome, must become absolutely useless: if it did bind tight, it must necessarily retard and obstruct the circulation of the blood through the spermatic vessels, and produce a disease of them, and of the testicle ^g.

^g Whoever would know the particular methods of executing this operation, may find them in Guido, Parey, Franco, Scultetus, Smaltzius, Permannus, Nuck, &c.

The royal stitch was performed in this manner: the intestines being emptied, and the portion which had descended being replaced, an incision was made in such manner as to lay bare the spermatic chord, about two inches in length from the abdominal opening downward. When the process was freed from the cellular membrane, it was to be held up by an assistant, while the surgeon with a needle and ligature made a continued suture, from the lower part of the incision to the upper, in such manner as to unite the divided lips of the wound again, comprehending the cellular membrane, and thereby endeavouring to straiten the passage, as they called it, from the belly into the scrotum, without injuring the spermatic vessels.

The operation is described by many of the old writers^h, with some small variation from each other, both in the manner and in the instruments; but all tending to the same end, and all proving that their idea of the disease, and of the parts affected by it, were erroneous and imperfect.

The fatigue to the patient must be greater in this than in the preceding operation, both on account of the large incision, and of the suture.

In some habits, either of them must be very hazardous, and in the majority of cases, painful, troublesome, and tedious; which circumstances might nevertheless be submitted to, if the cure

^h Paulus, Albucasis, Fab. ab Aquapendente, Guido, Rolandus, Parey, Serjeant Wiseman, &c. &c. &c.

was certain, the contrary to which did most frequently happen, even by the confession of the very writers who propose and describe these methods, and who universally order the long wearing a truss after such operations have been submitted to.

Some, who thought that the stitch added unnecessarily to the pain, have directed the incision to be made in the same manner as for the suture; but, instead of sewing the lips together, have advised that the common membrane be dissected out pretty clean, and the sore digested and incarned. This is so like to the operation for the incarcerated bubonocoele, both in the manner of making the incision and in its consequence, as tending toward a radical cure, that it may be looked upon as really the same thing; and how very fallacious and uncertain that operation proves toward answering this end is too well known.

Both these, the *royal stitch* and the *punctum aureum*, proved often destructive to the testicle, even in the most judicious hands; and when it got into those of ignorant pretenders, it proved most frequently so; for not knowing how to perform properly what they had undertaken, and finding it much more easy, after the incision was made, to slip out the testicle, they most commonly did so.

These are the principal methods proposed or practised by our forefathers for a radical cure of a rupture: among the writers indeed will be found some trifling variations from each other

in the execution of them, but the intention and aim is the same in all, *viz.* to prevent a new descent of either gut or caul, by producing an union of the parts, through which they either did or were supposed to pass. According to the degree of anatomical knowledge, and humanity of the proposer, they will be found to be more or less rational and gentle; but are all of them painful, hazardous, and most frequently fallacious, and have therefore been totally disused by all modern practitioners, who have either knowledge, compassion, or honesty.

No disease has ever furnished such a constant succession of quacks as ruptures have: they who have had some smattering of anatomy or surgery, and whose humanity has not been their prevailing quality, have adopted one of the preceding operations, or something like them; while they who have had less knowledge, and more timidity, have had recourse to the more sneaking knavery of specific applications.

The histories of prior Cabriere, Bowles, Sir Thomas Renton, Dr. Little John, &c. &c. &c. to be found in Dionis, Houston, and other writers, will furnish to the reader an idea of the practice and performances of some of those who stood at the head of those bold promisers: and our present newspapers daily supply us with a number of the lesser dealers in specific medicines, and new-invented bandages, by which the poor and credulous are gulled out of what little money they can spare. Operative quackery is not indeed, so frequent, or so readily sub-

mitted to; but I wish I could say that not more than one life has been destroyed in our own time, by attempts to form and support the character of an operator in this disease: to this kind of hazard indeed the poor are luckily not so liable; as it can only be worth the while of these rupture-doctors to murder those who have before-hand been simple enough to pay them well for it.

This is a subject in which mankind are much interested, and on which a good deal might be said; but as an honest attempt to save the afflicted from the hands of those who have no character to lose, and whose only point is money; might, from one of the profession, be misconstrued into malevolence and craft, I will not enter into it, but shall conclude by wishing, that they who have capacity to judge of these matters (which are as much the objects of common sense, as any other kind of knowledge), would not suffer themselves to be deluded by the impudent assertions of any charlatan whatever, but determine in this, as they do in many other things; that is, by the event. In short, if they who have so much credulity, as to be inclined to believe and trust these lying impostors, would only defer the payment of them till they had completed their promises, the fallacy would soon be at an end.

* * The foregoing Treatise on *Herniæ* must be allowed to be written with that lucid arrangement and perspicuity which distinguish the other productions from the pen of Mr. Pott. It is indeed a performance of extraordinary merit for the time in which it was published; but, as science is progressive, it is

not to be wondered at, if modern practitioners are enabled to discover in it some inaccuracies. It has particularly been remarked, that, in page 14, Mr. Pott has asserted that the external oblique muscle is the only one which has a ring or opening in its tendinous fascia: that "all descriptions and delineations of more openings than that single one, on each side, are not representations of nature, but are images of luxuriant fancy, and have no foundation in truth." Since this was written, the opportunities of studying anatomy have been much facilitated and extended, and from more accurate examination this description has been found to be not quite correct. Among the laborious and accurate investigators of modern times, Mr. Cooper holds a distinguished rank. To the subject of *Herniæ* he has paid particular attention; and, in the plates which he has given of the parts concerned, he has plainly delineated and demonstrated a ring formed by the fascia of the transversalis muscle. This is certainly an important fact, which ought to be well known and understood, as whoever proceeds to perform the operation for an incarcerated hernia, with a confidence that the ring of the external oblique can alone prevent the return of the contents of the sac, may find himself much embarrassed at meeting with another stricture, which undoubtedly is sometimes caused by the internal ring.

Mr. Lawrence also has lately published an excellent practical Treatise on *Herniæ*, which gained the Jacksonian prize from the Royal College of Surgeons, and in which this subject is accurately investigated.

I must also observe on another passage, in page 98, in which Mr. Pott has very properly deprecated the idea of tying the omentum by including the whole of it in a ligature; but though this may be productive of the mischiefs he has enumerated, surely it would be right to secure such vessels as are likely to bleed before the omentum is returned into the abdomen. Those vessels in some subjects are naturally large: by disease they sometimes become larger; and cannot, I conceive, be safely trusted without the security of ligatures. If they are tied singly and separately, the bad consequences which Mr. Pott has described would be avoided. E.

THE FOLLOWING
OBSERVATIONS AND CASES
RELATIVE TO
RUPTURES,
&c.

were written long after the preceding; and in former editions were inserted in a different part of the Work: but being a continuation of the same subject, they appear more properly introduced in this place.

S E C T. I,

DISEASES OF THE OMENTUM, PARTICULARLY
OMENTAL HERNIÆ.

THE general doctrine regarding these, is, that although they are sometimes troublesome from their weight and size, yet the omentum being insensible, and very little, if at all, necessary to vitality, they do not call for our immediate assistance, and never endanger the patient's life.

That omental ruptures are not attended with those immediately hazardous circumstances, which necessarily accompany intestinal ones,

is a truth beyond all doubt; but that diseases of the omentum are of little consequence, or that this kind of rupture is so harmless, as never to bring the life of the patient into danger, and to prove positively as well as eventually fatal, is a position which is by no means true.

Intestinal ruptures are primarily and originally hazardous; and this hazard arises as well from the structure, as from the functions of the parts concerned. The tender membranes of the intestines are very little able to bear any considerable degree of inflammation; and neither digestion of the food, propulsion of the chyle into and through the lacteals, nor expulsion of the fæces from the large guts (offices absolutely necessary to the very existence of the animal), can be executed, while such stricture is made on any part of the intestinal canal, as either hinders its natural motion, or renders its tube impervious; consequently, whenever this happens, from whatever cause, the patient is immediately disordered and brought into a state of hazard.

The omentum is not indeed so liable to injury, either from its structure, or from its office: the dislodgment of it from its natural situation within the belly, or its engagement in a stricture, seldom produce any immediate or very pressing symptoms; and therefore its confinement within a hernial sac has seldom been regarded as a matter of importance. Taken in a general sense, it certainly is not. The displacement of a mere portion of caul from its natural situation, and the detention of it in the groin or scrotum,

will not, in general, occasion any such interruption in any of the functions of the animal, or so disorder its internal economy, as to produce a considerable degree of pain or hazard: but whoever from thence concludes that omental ruptures are absolutely void of danger, will find himself much deceived. A more attentive observation of the disease, and of its effects, will inform him, that very considerable mischief sometimes attends them, and that the ill consequences of neglect or mismanagement, though perhaps less frequent and less rapid, are not less real.

The ills which may attend omental herniæ, are of two kinds: one of which is primary or original, proceeds from the part which first formed the rupture, and is confined to it independent of any other; the other is secondary, or an accidental consequence, flowing indeed from the same original malady, but affecting other parts also.

The omentum is liable to inflammation, supuration, gangrene, mortification, and scirrhus, while in its natural situation within the cavity of the belly; and each of these states is often the real, though most commonly unsuspected, cause of very alarming symptoms, and not infrequently of death.

It is not only liable to the same morbid alterations, when thrust forth from the cavity into a hernial sac, but the neglect or mismanagement of it, when there, is productive of these and other evils, which, for want of a proper at-

tention, have either been totally over-looked, or set to the account of other causes. Violent or continued pressure on it has produced inflammation with all its consequences; has brought on fever of a very bad kind, suppuration, slough, and sphacelus; long confinement of it within a hernial sac has occasioned such other alteration in its form and texture, as to render it truly a diseased body, and to produce many inconveniences from such its morbid state; and an undue or interrupted circulation through it, by means of stricture, occasions, sometimes, such a collection of extravasated fluid in the sac, as to render it a necessary object of a surgeon's attention; not to mention that the dragging down a larger portion of the caul into the scrotum, proves sometimes more than merely disagreeable, by reason of its connexion with the abdominal viscera.

These are ills which arise from omental ruptures primarily, and are dependant upon the nature of the disease, considered abstractedly, without any view to or connexion with any other. But there is another which, although it may be called secondary, or be considered as a consequence, is both frequent and hazardous.

When a portion of the peritoneum, forming a hernial sac, has been thrust quite down into the scrotum, I believe I may venture to affirm (notwithstanding what may have been said to the contrary), that it seldom or never returns back into the abdomen again, but becomes immediately, and wholly, connected with the cel-

lular membrane investing the spermatic vessels; so that whoever has once had such sac so protruded, can never have any security against the disease called a rupture, but what is derived from such means as may render the entrance into that bag too small to permit any thing to pass from one cavity into the other. Upon this principle, and on this only, stands the utility, and indeed the necessity, of trusses and such kinds of bandages. By these, in infants, and in young subjects, such a coarctation or lessening of the entrance into the sac is produced, that a firm and permanent cure is often obtained; but in the majority of adults, and in all people far advanced in life, such effect is not to be expected. It does indeed happen to some few, but it is to be regarded as an accidental benefit; and the bandage being the only means whereby a descent can be prevented, it ought to be constantly and unremittingly worn.

Whoever has a just idea of an hernial sac, must be convinced, that while a body, or substance of any kind, possesses that part of it which communicates immediately with the belly, such passage can never be closed: and, consequently, that the one point in which even the palliative cure of a rupture consists can never be accomplished.

A portion of omentum, although it be compressible, soft, and slippery, will, while it remains in such passage, keep it as constantly and as certainly open, as any other body whatever;

and from the very circumstances of its being soft, slippery, and compressible, will still more easily let any other body pass by it: a portion of the intestinal canal is frequently pressed against the mouth of this sac, and that with considerable force. The orifice being open, and the omentum affording but little resistance, the said portion is often pushed into the bag, and by this means a new, and still more interesting and hazardous complaint, is added to the old one.

This happens much more frequently than it is supposed to do; and is, in the nature of things, so probable, that no person who has an omental rupture, can, for any the shortest space of time, be said to be secure against the descent of a portion of intestine; and consequently is always liable to every kind and degree of hazard attending an intestinal one.

CASE I.

A GENTLEMAN, about forty-three years old, had, for some time, been subject to a rupture of the omental kind, which came down when he was in an erect posture, and went up with great ease when he lay supine.

I reduced it, and put on him a truss, which answered the purpose very well, by keeping the rupture up all the while it was worn: but the patient, disliking the necessary degree of pressure, and finding very little inconvenience from

his disease (it being merely a piece of caul), laid aside the use of his bandage, and suffered his rupture to take its own course.

Being obliged to take a long journey on horseback, and being apprehensive that his complaint might, by exercise in hot weather, prove troublesome, he had a mind to put his truss on again, not doubting but that he could replace his rupture as easily as he had been accustomed to do: he tried several times, but could not accomplish it. He came to me; I tried, and was foiled. I repeated the attempt again and again, but to no purpose, still being clear that the disease consisted only of a portion of omentum, and that not large.

From me he went to one of the advertisers; who having, for a day or two, amused him with anointing his groin, put on him a bandage with a large, hard bolster; which being buckled very tight, he was permitted to begin his journey, and was told that, long before he returned, the portion of caul would be shrunk to nothing, and his disease thereby cured. He set out, and got about twenty miles, when he found himself so ill, and in so much pain, that he determined to come back to London; which he accomplished with great difficulty.

I found him in extreme pain all over his belly, which would hardly bear being touched; he was incapable not only of sitting or standing upright, but even of lying straight upon his back; he could hardly bear the weight of the

bed-clothes; and the most gentle pressure, toward the bottom of his belly, and his groin, was intolerable. The scrotum, and spermatic process, on the ruptured side, were swollen, tense, and inflamed; his skin was hot and dry, his pulse hard and frequent, and he had such a degree of restlessness, that although motion was very painful to him, yet he could not lie still for two minutes.

Notwithstanding the many opportunities which, before this accident, I had had of knowing the true nature of his rupture, and that I was perfectly convinced that it had always been omental merely, yet from his acute pain, from the enlarged and inflamed state of the process, and from the nature and rapidity of his symptoms, I was much inclined to believe, that a portion of intestine had some share in the present mischief; but the patient, who was a very intelligent man, insisted on it that it had not, and that all his present malady was caused by the pressure of the truss on the omentum.

I took away a considerable quantity of blood, and, notwithstanding the patient's opinion, directed a solution of the sal rupell. in infus. senæ to be taken immediately, and a purging clyster to be thrown up as soon as it could be got ready; for the parts were in such a state, that, had there been more convincing marks of intestinal stricture, reduction by the hand was at that time impracticable, and unfit to be attempted. I saw him in about six or eight hours. The discharge

per anum had been such as to put an end to all suspicion of stricture on any part of the intestinal tube, but his inflammatory symptoms were not at all lessened. I took away more blood, and would fain have put him into a semicupium, but the dread of motion prevented him from complying with it. His pain was excessive; and as he had now lost a very considerable quantity of blood, and had had a very free discharge by stool, I threw up a clyster of warm water, oil, and laudanum, and gave him two grains of extract. thebaic. by the mouth. He passed so bad a night, that he was glad, early in the morning, to comply with the use of the bathing tub, by the repeated use of which, and taking care to keep the body open, by lenient, oily remedies, he, at the end of four days, got to be easy.

Fomentation and poultice reduced the tumefaction in the groin and scrotum; and when they were removed, the rupture appeared to be nearly in the same state as before the accident, only a little larger.

Two years after this he died, and was opened; his rupture was found to be merely omental, and the portion of caul which formed it was, in its inferior part, adherent to the hernial sac in two places.

CASE II.

A YOUNG man, who worked as a journeyman with a silversmith in Foster-lane, came to me three or four different times, on account of a rupture, which appeared to have every mark of being merely omental.

It was large, and had, as he said, been for some years easily reducible; but it was not at all so at his last visit to me. By a late increase of size and weight, it was become very troublesome, as well as very visible. Finding reduction impracticable, I recommended to him the use of a suspensory bandage, and gave him directions for his general conduct.

At the distance of about six months from his last visit, I was sent for to St. Bartholomew's hospital in a hurry, to a person supposed to labour under a hernia with stricture.

I found a man who was only not dead; he had a dying countenance, a faltering pulse, a constant hiccough, and cold extremities.

As it did not appear to me that it was possible for me to do him any service, I was going away, but was called back at the patient's particular request. He made himself known to me to be the person I have just mentioned; and a friend, who was with him, gave me the following account:—

That a few days before, having an intention

to marry, and believing that his rupture would be prejudicial to him, he had applied to somebody who had been recommended to him for relief; that the person to whom he applied, having received from him such gratuity as he could afford at that time, in part of payment, had promised to cure him within a month; that he anointed him for two or three days with an ointment, and then put on him a very strict bandage; that he was ordered to wear this bandage constantly, day and night; that when he had worn it three days, not being able longer to endure the pain it caused, he took it off, and went to his surgeon, who seemed to be surprized, and bad him go home, apply to his groin and scrotum a poultice made of boiled turnips and hog's-lard, and come to him again the next day; that the inflammation and swelling increasing, he was prevented from fulfilling the last injunction, and therefore sent for his operator, who came to him, examined the parts, said he had got the pox, and refused to do any thing more for him without the deposit of another five guineas; and that not being able to comply with this demand, his friends had brought him to the hospital.

The scrotum had been of considerable size, but was now subsided; it had been very painful, but was now easy; it was in many places livid; and, upon handling, the fingers perceived that alarming crepitus, which infallibly denotes putrid air from gangrenous membranes,

When I saw him in health, I was perfectly satisfied, that his rupture was merely omental; I was as much satisfied, that his present state was owing to his bandage; but nevertheless I cannot but say, that I suspected a piece of intestine to have slipped down, and to have occasioned this fatality by being pressed on.

I inquired into his discharge by stool, and was told, that he had a large one within the last two days, but having often experienced how liable people are to deception in these cases, I did not give entire credit to the account.

That evening he died, and next morning he was opened.

The scrotum and hernial sac were completely mortified, and within the latter was a small quantity of a most exceedingly offensive sanies, together with a large piece of sphacelated omentum only. The whole intestinal tube was within the belly perfectly sound, and in good order; but the omentum, within that cavity, had partaken considerably of the mischief done to that part of it which was in the hernial sac, and was gangrenous throughout.

CASE III.

I WAS desired to visit a gentleman at Hackney, who had for some years been afflicted with a rupture, which at different times had been

examined by Mr. Sainthill, Mr. Samuel Sharpe, and others; and had, by every body, been deemed to be merely omental. For some years it had been kept up by means of a steel truss; but a few months before I saw him he had laid aside his truss, and had put on a dymity bandage, with a large bolster, which he had worn very tightly buckled. How he had managed himself in other respects, I know not; but I found him with his groin and scrotum much swollen, and very painful to the touch; he was hot and feverish, and had been two days without a stool. The state of the parts was such, that an immediate attempt to reduce the rupture by the hand was impracticable, at least could not have been attended with any probability of success. He was immediately let blood, had a clyster, and an aperient draught. Next day I found him worse, in more pain, with more inflammation, and a greater degree of tumefaction, and had not yet had a stool. I was obliged to depend upon the patient's own account of his case previous to this attack. He insisted on it, that his rupture had never been intestinal, and that every body who had seen it had given him that assurance. This I could not contradict, but was, at the same time, much inclined to believe, that a portion of intestine was down now. The cataplasm was applied over the whole scrotum and groin, a stimulating clyster again thrown up, and a purging mixture ordered to be taken, cochleatum, every two

hours, until he should have stools, but all to no purpose.

On the third day he was worse in every respect; his belly exceedingly tense, his pain great, his restlessness fatiguing, and he felt not the least tendency towards a discharge per anum.

I proposed the operation, but the patient and his friends objected. A clyster, of an infusion of tobacco, was administered. This produced such sickness and languor, with cold sweats, &c. as alarmed every-body, but produced no stool.

Late in the evening, he submitted to the operation. The parts were now so altered, that I guarded myself with a most doubtful prognostic. I made an incision from the groin to the bottom of the scrotum: the skin, dartos, and hernial sac, were all gangrenous; and from the cavity of the sac I let out a considerable quantity of a most offensive sanies, and with it a large, putrid slough, which appeared to have been a part of the omentum. I examined the opening in the abdominal muscle, and was satisfied that it was in a natural state, and that nothing from the abdomen was engaged in it. On which account, I did not meddle with it, but having dressed the wound superficially, put on his poultice again. Dr. de la Cour was present at the operation, and directed for the patient. Another day passed without stool, and this I thought must have been his last day, but on the

fifth he had a most plentiful discharge, and was thereby relieved from the tension of his belly, and his most troublesome symptoms.

The sore was a long time crude and unkindly, but by means of the bark, and proper diet, all difficulties were surmounted, and the patient got well.

Had a piece of intestine been in the sac, it must, I think, have necessarily partaken of the state in which both it and the omentum were; and although the patient might possibly have survived, yet a discharge of fæces through the wound must, at least for a time, have been the consequence; but here was nothing of that kind, nor any reason, after the constipation was removed, to suppose that the intestine had ever sustained any injury, or had any share in the complaint.

CASE IV.

A MAN, about fifty-five years old, asked my opinion concerning a hard swelling, which he had on each side, both in the groin and scrotum.

To the eye they appeared like omental herniæ; but upon examination, they were not only unequal in their surface, but craggy, and incompressibly hard.

The patient said, that at the time of handling them, they gave him very little uneasiness, but that such handling always made them painful for some time after: that he was, at times,

attacked with acute pain darting through his belly, up into his loins; and that such attack was frequently attended with a nausea, and an inclination to vomit; that he had been subject to a painful colic, attended generally with constipation of belly; that an erect posture, if continued for any length of time, was very irksome; that these swellings were for several years soft, and easily returnable into the belly; that while they were so, he had, by the advice of Mr. Samuel Sharpe, worn a steel truss; but that being engaged in a bustling active kind of life, and the truss not always doing its duty, he had left it off for some years. That for the last two years he had never been able to return either of them, since which they had altered very much; that in their present state he had consulted several of the profession, and some quacks; that by some they had been deemed scirrhus testicles; by others, scirrhi of the spermatic processes; that he had gone through a course of mercurial inunction; had taken freely of the solution of sublimate cu. de coct. rad. sarsaparillæ, and had (in his own phrase) swallowed a wheelbarrow-full of cicuta; that he had been promised a cure by having them laid open, to which he had submitted, had not the operator been too lavish in his promises, and too exorbitant in his demands; and that frequent attempts had been made to soften them by fomentation, poultice, &c. but all to no purpose.

He had a sallow complexion, a languid fa-

tigued look, a weak irregular pulse, too much heat and thirst, and too little urine: upon the whole, he seemed a very improper subject for any chirurgic treatment, if any could have been rationally proposed; but as it did not appear to me that any thing of that kind could be done for him, I advised him to keep his scrotum suspended, and to consult a physician on account of his general state.

Not long after, his legs swelled, he lost his appetite, and his urinary secretion almost totally ceased. The consequence of which was, a general anasarca, and death.

In each groin, and on each side in the scrotum, was a hernial sac, bearing all the marks of antiquity: in each of these was a hard, knotty, irregular kind of body, whose surface was covered with varicous vessels.

These bodies passed from the cavity of the belly, through the opening in the abdominal muscle, were continuations from the omentum, and were truly cancerous.

CASE V.

THAT the residence of a portion of omentum in an open hernial sac, must render the patient constantly liable to the descent of a portion of intestine, is so self-evident, that it cannot admit the smallest doubt; but the following case being rather remarkable, I have inserted it.

A drunken idle fellow, who lived in the neighbourhood of St. Bartholomew's, used to come frequently to the surgery for pledgets for broken heads, &c. He had also a small omental hernia, as fairly and decisively characterised as possible. Myself, and all the surgeons, had at different times replaced it for him, and the hospital had once or twice given him a truss; but being much oftener drunk than sober, he seldom wore it all, and when he did, it was seldom in the right place.

One day while I was at the hospital, he was brought in with an immense swelling of the scrotum, and all the symptoms of a hernia with stricture, and those so far advanced, that he had no chance but from the operation, which I therefore performed immediately.

In the sac was a considerable portion of the ileum, and a large piece of the colon, with the appendicula vermiformis, together with the small piece of omentum, which had constituted the original rupture. The parts were mortified, and the man died.

Unless it can be supposed, that so large a quantity of intestine could, by every-body, be mistaken for a small one of omentum only, it must be clear that the residence of that small piece of omentum gave the opportunity for the formation of the intestinal hernia, and cost the poor man his life; more especially if it be noted, that the increase of tumefaction and attack of bad symptoms were the immediate consequence of an exertion of strength:

CASE VI.

WHILE I was correcting these papers for the press, I was desired to go down to St. Katharine's to see a patient, who was supposed to be afflicted with an incarcerated hernia.

I found a man between sixty and seventy, whose scrotum was large and full, and, as I thought, contained both omentum and intestine.

It was the third day since he had had a stool, although gentle cathartics had been given each day. His pulse was rather full, but otherwise not much amiss; he had now and then an inclination to vomit, and his belly was very tense; but, on the other hand, he had neither the sensation of general or local pain, either upon being examined, or put into motion, which persons labouring under a stricture most commonly have; neither had the spermatic process the feel which it usually has in such cases.

I could not say that I thought him in immediate hazard, although the irreducibility of his rupture, and the length of time which had passed since he had a stool, were certainly unfavourable circumstances. I directed a tobacco-clyster to be given immediately, and five grains of *extractum catharticum* to be taken, *alternis horis*, until he should have a stool. The clyster was administered and repeated, and the pills were taken, and I visited the patient early the next morning.

He had not had any discharge per anum, his belly was become much more tense, and I thought him upon the whole so much worse, that I proposed the operation, and the patient submitted to it.

In the hernial sac was a large piece of omentum, or rather of what had been omentum, but which was now hardened into a large flat cake, as incompressible as cold bees-wax, and about the size of a large mangoe: it distended all the upper part of the sac, and was adherent to the lower part of it. Behind this large body lay a portion of the intestinum ileum; and below this, that part of the colon which is annexed to it: the colon was considerably distended with flatus; and the ileum was so wedged in and pressed, by the altered omentum, that nothing could possibly pass through it. When the portion of omentum was removed, the tendon made so little stricture on the gut, that, had it not been for the great distention of the colon, it might have been returned into the belly without division.

In short, the constipation of belly, and mischief proceeding from thence, seemed to arise entirely from compression made by the hardened omentum, and not from a stricture.

In my general treatise on ruptures, I have ventured to dissent from the commonly received doctrine concerning the propriety of tying the

omentum previous to its extirpation, when it may be found necessary to remove a part of it; and have said, that I thought it not only unnecessary, but pernicious.

Perhaps I may have conceived an unreasonable prejudice against this practice, and it may not appear to others so hazardous, or so improper, as it does to me; perhaps the cases which follow, and which are some of those that have furnished me with my objections, may not be thought cases in point; and the miscarriages in them may be thought to be deducible from other causes: all I can say is, that it appeared to me, that the patients suffered principally, if not merely, from this cause; and that as I am by repeated experience convinced, that a portion of the omentum, however large, may be extirpated with perfect safety, without being previously tied, I shall never practise or advise the ligature.

CASE VII.

A MAN, about thirty years old, was taken into St. Bartholomew's hospital for a considerable swelling of the groin or scrotum.

The account he gave of himself was as follows: that he had for several years a rupture, which many surgeons, who had seen it, had deemed to be merely omental; that he had formerly had a truss, but whether from its being ill made, or from his injudicious manner of wearing it, it

had never kept his rupture properly up, and he had long disused it; and that the day before he was brought into the hospital, a horse had kicked him in the groin, and brought on that increase of pain and swelling of which he now complained.

It was Mr. Nourse's week for accidents, and he consequently took the care of him. He was let blood, had a clyster, and a poultice was applied.

The next day the swelling was the same, and the man had not had any stool. A purge was administered, which he ejected by vomit; and another clyster was injected in the evening. On the third day, finding that nothing had passed, Mr. Nourse suspected that the intestine was concerned: he bled the man again largely, and ordered two spoonfuls of a purging mixture to be given every two hours, until he should have stools. That evening he vomited two or three times; and next morning being still without a stool, Mr. Nourse determined upon the operation.

The hernial sac was sound, thick, and tough, and contained a portion of omentum, and some bloody water. Mr. Nourse and myself both examined the omentum carefully, upon a supposition that we should find some intestine within it. It was perfectly sound, but its vessels were considerably dilated: there was no intestine, nor did the tendon bind upon the omentum. As there was no gut down, and as the portion of caul was now too large to repass the ring,

Mr. Nourse made a strict ligature on it, just on this side, and cut it off.

Soon after the operation, the man had stools; but during that night got little or no sleep, and complained of much pain. The next day he was worse, was feverish, complained of great pain about his navel, and that he could not sit or stand upright, but had two loose stools.

On the third day he was still worse; that is, had more fever, complained that his pain in his belly was excessive, and could keep nothing on his stomach. On the fourth day, toward evening, his pain suddenly left him, and early in the morning he died.

Mr. Nourse, who was still apprehensive that the intestinal canal was some way or other concerned in the mischief, desired me to open the body.

The abdominal tendon was sound and unhurt, nor was there any such appearance about the wound as always accompanies mischief proceeding from thence: the intestines were perfectly free from blemish, inflammation, or obstruction, nor was there any appearance of disease of any kind on or about any of the viscera, except the omentum, which was gangrenous through its whole extent.

What share the inflammation of the omentum might have in preventing a free passage through the intestines I know not, nor to what other cause such obstruction might possibly be owing; but that the omentum was sound, at the time

of the operation, and gangrenous when the patient died, is beyond all doubt.

CASE VIII.

A MAN, about forty years old, who had for several years been afflicted with a rupture which had always been deemed to be merely omental, was brought into St. Bartholomew's hospital labouring under all the symptoms of an intestinal hernia, with stricture; and those so pressing, that the operation immediately performed was his only chance.

Upon dividing the sac, a large piece of omentum (which was considerably thickened in its texture, and whose vessels were considerably distended) presented itself. This was carefully expanded, as far as it would admit, and laid first on one side, and then on the other, but no other body discovered. The incision being continued higher up, in order to get at the ring, as it is called, a portion of intestine was discovered; it was so small, as hardly to consist of the whole diameter of the gut, but begirt very tightly. I had, when the intestine was fairly in view, a mind to try whether I could not return it without dividing the tendon, and succeeded in the attempt. When this was done, the consideration was, what to do with the omentum. It was so large, and so affected by stricture, that it could not repass the abdominal tendon without division: as the gut was returned,

it seemed a pity to divide the tendon merely on account of the caul: it was therefore determined to tie it, and cut it off.

The man had a plentiful stool in an hour after the operation, but toward evening, and during the night, was much out of order. Next morning he was hot and restless, had a frequent and full pulse, complained of great pain about his navel, and all over his belly, which was much too tense, and he was now and then very sick.

Blood was drawn from him freely; he had an oily laxative clyster; and Dr. Pitcairn directed for him. On the third day, all his febrile symptoms, and his pain, were much exasperated, notwithstanding he had three or four stools.

I think I may venture to say, that both the physician and myself did every thing in our power for him; but on the fourth evening he died.

As the case had given me some concern, upon a supposition that the man might have had a better chance, had the tendon been divided for the return of the gut, I opened him as soon as I had notice of his death. I examined the whole intestinal canal, and found it free from blemish: the peritoneum was unaltered; but all that was left of the omentum was gangrenous

C A S E IX.

A MAN, about thirty-six years old, was a patient in St. Bartholomew's for a sore leg. While

he was there, he desired me to look at a rupture, which he had long had, and which was clearly omental and irreducible.

When his leg was well, he desired me to cut him, as he called it; alleging, that his rupture was so troublesome, that it prevented him from following his business. I refused it, and directed him to wear a suspensory bag.

He solicited me again and again, and at last, overcome by his importunity, I performed the operation. The sac was thin, and the piece of omentum not large, nor at all altered, nor was there any thing else in the bag: I made a ligature, and cut it off without meddling with the tendon. From the time of the operation he was in constant pain all over his belly.

Bleeding, laxative medicines, clysters, &c. were administered, but to no purpose. On the fourth day he died, and had no appearance of mischief about him, except a highly inflamed omentum.

INTESTINAL HERNIÆ.

WHEN a portion of intestine, which has passed out from the cavity of the abdomen through the opening in the oblique muscle, is so begirt as not to be capable of executing its proper office, the person, to whom this happens, may be said to be in immediate danger.

The general offices of the intestinal tube are, digestion of the food, formation of chyle, im-

pulsion of it into the lacteals, and expulsion of the fæces forth from the body. If these so necessary functions are, for any considerable time, suspended or prevented, the consequence is too obvious to need mentioning: fortunately for mankind, this cannot happen unknown to us. Whenever such stricture is made, symptoms and complaints arise which warn us of our danger: pain, tumefaction, and incapacity of going to stool, are the first and most immediate effects. If the case be neglected, or no proper remedy used, inflammation, fever, sickness, and vomiting, soon follow; and these are often, in a short space of time, succeeded by hiccough, gangrene, and mortification. Whoever considers what the first of these are indications of, and knows what will inevitably be the consequence if they be not obviated, must be sensible, that the very slightest attack of this kind ought to put us on our guard, and excite us to use our utmost endeavours to prevent further mischief. How long the first and seemingly slightest symptoms may continue before material injury be done, no man can pretend to say: this must depend upon a variety of circumstances, and will be different in different cases; but as no man can be duly and intimately acquainted with these circumstances, and as the change from the most slight to the most hazardous is sometimes very rapid, no one can be vindicated in suffering the smallest portion of time to be lost by waiting a few hours.

The first thing to be done is to attempt the reduction of the intestine: if this fails, our next

endeavour must be to relieve the symptoms, and thereby remove the obstruction to such reduction.

The means prescribed for this purpose are, phlebotomy, clysters, cathartics, a semicupium or warm bath, fomentation, embrocation, and cataplasm; and these, by the generality of our writers of systems and institutes, are ordered indiscriminately, as if their efficacy were nearly equal, and it was a matter of indifference which a practitioner made use of. This I cannot conceive to be true: some of them are really useful; but others, as far as my experience goes, of little or no use at all. Among the former, I reckon phlebotomy, cathartic medicines, clysters, and the warm bath; among the latter, embrocation, fomentation, and poultice. The former have saved many a life: from the latter, I never saw any material benefit, though I have often and often tried them; and I am much inclined to believe, that the use of them has cost many a person dear, by occasioning a loss of that time which ought to have been otherwise employed. The inflammation and distention of the intestine can never be removed while it is begirt by the tendon of the abdominal muscle; whatever may be the original cause of the stricture, the effect must be the same; the tendon lies out of the reach or influence of a greasy poultice; the external skin may indeed be relaxed by it, and some small part of the uneasiness may thereby be relieved; but this is of no importance toward appeasing the symptoms, lessening the hazard,

or affording a remedy for the original evil. The mere relaxation of the skin will not affect the stricture made by the tendon, the warmth of the poultice will increase the distention, and the intestine will become gangrenous, notwithstanding a small part of the external inflammation may seem to be appeased¹.

If the symptoms are neither such, nor so pressing, as to require the chirurgic operation; or if the fears and apprehensions of the patient, or of friends, prevent such operation, however necessary it may be; the most powerful and most efficacious means of obtaining relief are, phlebotomy, warm water, and the exhibition of such medicines as are likely to produce stools: by the first we reduce the strength of the patient, lessen the velocity of the circulating fluids, moderate the febrile heat, and take the chance of a deliquium; by the second we endeavour to relax the tendinous opening by which the intestine is begirt; and by the third, the discharge of fæces, through the intestinal canal, is attempted. The power of the two first is clear and undoubted; but I cannot help thinking, that we are, in some degree, wrong about the last. Cathartic medicines have, in all times, been prescribed in the case of hernia with stricture; but the true intention, which ought by their means to be

¹ Cold, discutient applications, bid much fairer to retard the hasty progress of the inflammation, than warm ones; and will be found to answer the purpose much better. Such as solutions of sal ammoniac. crud. in vinegar, the sp. mindereri, the acet. lythargirit. and such like.

aimed at, does not seem to have been, in general, clearly understood: this perhaps is the reason why practitioners and writers disagree so much about the kind of medicines which they think most proper; some advising those which are of the lenient unirritating kind, others prescribing those which are most stimulating: both cannot be right, and therefore it may be worth while to inquire, what should be the point aimed at, and which are the most likely means to accomplish such end.

Is a discharge, *per anum*, the primary view, and therefore the first object of attention? or is such discharge to be regarded only as a necessary or natural consequence of the removal of the intestine from its prison? If the former be the case, it is clear, that in the circumstances in which such patient must be, stools cannot be procured too soon, or by means which are too easy; and that such medicines as are most likely to slip through without stimulus, or irritation, must be the most proper, and most likely, to answer the end; but if the case be otherwise, if the first view should be to extricate the gut from its stricture, and the discharge of *fæces* is to be regarded only as a necessary consequence of such removal, then, I think, it is as clear, that such lenients are unfit, because unequal to the task; and that a power or faculty of stimulating or irritating the muscular coat of the intestinal canal, ought to be the property of whatever is administered.

That a depletion of that canal is a great and

immediate relief to the patient, by unloading the belly, and lessening the tension, is beyond a doubt; and it is as true, that without such discharge, the patient must perish, even though the stricture be taken off; but still the two objects are distinct and different, and the removal or extrication of the imprisoned piece is clearly the first^m.

When purgative medicines of any kind are given by the mouth, in the case of a strangulated hernia, and do not succeed in removing the intestine from the stricture, they are either rejected by vomit, or, by deriving an increased quantity of acrimonious fæcal matter downward, add to the pain and tension of the belly.

This is a very material objection to the use of all cathartics given by the mouth, and more especially to those whose bulk or quantity is at all large; and renders the application of such kind of medicines to that part of the intestinal

^m It may not improperly, in this place, be asked, whether the operation of a purging medicine may not be different from either of these? and whether it may not be in an incarcerated hernia what it sometimes is in an ileus, where it often seems to act by overpowering that spasm which had begun to excite inflammation, and would soon bring on mortification? What still adds force to this method of reasoning is, the consideration of the great relief always obtained from a warm bath. Whether this be generally true or not, it is certainly well worth consideration. May not from this also be inferred the reason why opium, joined with purgatives, is sometimes, in the same disease, found to render the operation of the latter more successful?

canal which is below the stricture, much preferable.

Indeed, the superior advantages of stimulating medicines, given per anum, are, in this case, many and great: they give much less disturbance to the stomach, they occasion no pain in the belly, nor do they at all increase the load or tension; they may be repeated frequently; and, what is of the most consequence, they may consist of such materials as cannot properly, or indeed safely, be given by the mouth. All these are manifest advantages; but the last circumstance is peculiarly so, for the tobacco-smoke cannot possibly be swallowed, nor would any man in his senses think of putting the infusion into the stomach, although it is well known, not only that both may be very safely administered in the form of clyster, but that they are the most powerfully efficacious and the most useful medicines we are acquainted with for such purpose.

I have mentioned the smoke and the infusion of tobacco as being equally useful, and have, from repeated experience, found them so.

Where a proper machine is at hand, or can easily be procured, I should certainly prefer the smoke to the infusion; because, the effects which both are apt to produce on the nervous system of the patient are, I think, lighter in the former than in the latter; but where such machine has not been at hand, nor could be procured without a loss of time, which, in these

cases, is always precious, I have frequently used the infusion, and generally very successfully. The symptoms arising from the intoxicating quality of the tobacco, the languor, the cold sweat, &c. which this weed causes, more especially in those who have not been accustomed to it, are, as I have said, I think, rather more from the infusion than from the smoke; but, though I have often used it, I do not remember ever to have seen any ill effect from it. It generally makes the patient very sickⁿ, and produces a fainting and a cold sweat, which, to those who do not immediately reflect on the intoxicating quality of tobacco, and the symptoms of such intoxication, may appear alarming; but whether it be from the swooning, or from the irritation made in the intestinal canal, or, which is much more likely, from both conjointly, I have, several times, seen ruptures, which have resisted all attempts by the hand, return of themselves, untouched, during the influence of such clyster.

Many other stimulating applications to the rectum, I have, at different times, made trial of, but never found any at all equal, in effect, to the tobacco; nor did I ever see any of them produce that convulsive motion of the muscles of the abdomen, which most frequently accompanies the sickness attending the use of this

ⁿ The infusion, which I have always used, has been made by pouring one pint of boiling water on one drachm of tobacco.

weed, and which, although fatiguing and troublesome while it lasts, yet is certainly one of the means whereby the extrication of the portion of intestine is accomplished.

I have also several times seen them both fail, after fair and repeated trial. Whoever expects infallibility in medicine, will be disappointed; but I can, with truth, affirm that I have seen both the smoke and the infusion succeed much oftener than any thing else, and sometimes in very desperate cases.

CASE X.

I WAS desired to visit a ruptured patient with Mr. James, then surgeon to St. Luke's hospital.

The patient was a stout, healthy man, about thirty; the rupture was large, hard, painful, and beginning to be inflamed on the outside; no stool had passed for two days; the man had great pain all over his belly, and a frequent vomiting. Mr. James had many times tried to reduce it; he had bled him freely; and had given both purges and clysters, but all without effect.

The scrotum was exceedingly tense, and the pain which attended the most gentle handling was so exquisite, as not only to render all attempts for reduction, by the hand, improper, but hazardous.

It was about noon when I saw the man: every thing except the tobacco had been tried; the symptoms were advancing hastily, and the operation was proposed and submitted to; but while our things were getting ready, we thought we might as well try the smoke-clyster.

One ounce of tobacco was expended without any effect at all, either general or local; but toward the consumption of another, the patient became sick and faint, and complained of a strange kind of motion in his belly, and also in his rupture. Upon turning the bed-clothes back, the motion was not only to be felt within the scrotum, but was even visible; this motion continued about two minutes, when the intestine, without being touched, returned; the man became immediately easy; and, in half an hour, had a plentiful discharge per anum.

CASE XI.

IN the month of September, 1767, I was sent for in a hurry to some little distance from London, in order to perform the operation for the bubonocoele.

I found a very large rupture on the right side, and that in so painful a state, as not to permit the most gentle handling. The patient had been treated with the greatest propriety, had been freely and repeatedly let blood, had taken purging medicines, clysters, &c. and had been several times in a bathing-tub: his vomiting was

frequent, he had a tendency to a hiccough, and he could not bear to extend, in the smallest degree, the thigh on the ruptured side.

The operation had been consented to before I had been sent for; but upon my asking the gentleman who attended, if he had a machine for giving the tobacco-smoke clyster, and being answered in the affirmative, we determined to try it first.

When about half an hour had been spent in the continual impulsion of the smoke, the man cried out, ‘My rupture is going up!’ and, in the space of two or three minutes, it did so, with a noise which was heard by every one in the room.

CASE XII.

A GENTLEMAN, whom I had long known, had often showed me a rupture, which he had laboured under as long as he could remember, and which was now and then troublesome to him, because he could not wear a truss to keep it within the abdomen. It was of the congenial kind; that is, the sac of the hernia was formed by what should have been the tunica vaginalis testis. But his testicle, on that side, had never descended from the groin, but lay just on the outside of the abdominal opening; neither had the portion of intestine got any lower, so that both of them lay together: on which account he not only never could wear a truss, but even

the waistband of his breeches, if buttoned tight, was troublesome.

This gentleman was suddenly seized with the symptoms of a stricture, and those not slight, even at the first attack. The piece of intestine, though always in the groin when he was in an erect posture, had always gone up upon his going to bed, and was always returnable when he was supine. He tried now to reduce it as usual. He sent for me, and all my attempts were equally successful. His belly was very hard, he began to vomit, and the testicle became very painful to the touch.

All the circumstances were disagreeable, the symptoms advanced with uncommon rapidity, the portion of gut was small, the testicle inflamed and somewhat enlarged: an operation might become necessary, but could not, in such circumstances, be desirable.

He was bled freely, even to swooning; purging medicines were given, and immediately rejected; clysters had no effect, but were as immediately returned; and the patient, knowing his own situation, was much alarmed.

Dr. De la Cour, who was his physician, was called in, and having tried the tobacco-smoke ineffectually, we agreed to throw up a pint of the infusion, made as before related. It soon made him exceedingly sick and faint, and caused a large discharge of wind, upward and downward, from which I expected a return of the gut, but in vain. At the distance of an hour

or two, the infusion was repeated, with the same effect of faintness and sickness; during which he was put into warm water, and when he had been in it a few minutes, the slightest application of the hand obtained immediate reduction, and stools.

CASE XIII.

THE late Mr. Fullager desired me to go with him to see a wine-merchant in Billiter-lane, who had all the symptoms of strangulation in the case of a scrotal hernia, and whose rupture he had ineffectually endeavoured to reduce. I tried, and was also foiled. The symptoms were rather pressing. Mr. Smith, in Cheapside, who had been the apothecary to Mr. James's patient, was also apothecary here. It was determined that I should meet Mr. Fullager again, in about three hours, in order to perform the operation; and that, in the mean time, Mr. Smith should throw up the tobacco-smoke. At the appointed time we met, and found Mr. Smith employed as we had desired; I laid my hand on the rupture to examine the state of it, and it was wonderful with what facility it went up.

The same thing, exactly, happened to me with a coachman of the late Dr. Nicol of the Charter-house; but the same man, upon a return

of the complaint, at about two years distance, was not again so fortunate; the smoke and infusion both failed, and the operation was performed; but too late.

IT is as yet, with many, a disputed point, in the case of incarceration of a portion of intestine in a hernia, whether the stricture made by the tendon be original or consequential; or, in other words, whether the disease be not originally in the intestine, and the stricture a mere effect of its dislodgment and distention. The arguments used in support of the latter opinion are by no means void of force, but at the same time I cannot think them conclusive. The perfect health and ease of many, nay of every body, immediately before a *sudden* descent, the very pressing and alarming symptoms with which such descent is often attended almost instantaneously, and the relief which reduction immediately produces in the majority of such cases, together with the immediate and total removal or dissipation of all the evils occasioned by the confinement, seem to prove the general opinion to be true.

On the other hand, the perfectly quiet, easy, and uncompressed state of the parts, in many instances, immediately previous to the invasion of bad symptoms, in cases where there has been no exertion of strength, nor any apparent accession of a larger and new portion of gut, are circumstances which, added to the incapacity of the

tendon to contract, are well worth weighing, as they certainly give force the former supposition.

As a mere point of speculation, it is not perhaps a matter of very great importance; but when considered as applied to practice, and influencing our conduct with regard to the chirurgic operation, it becomes very interesting indeed.

When the hand and the common means for reduction fail, the operation is our only resource, and if applied to in time, very seldom fails; so seldom, that I believe I might venture to say, not one in fifty^{*} dies of it, if timely and judiciously executed; and when it becomes absolutely necessary, it is the *unicum remedium*. This consideration renders it a matter of still more importance; for as in cases where it becomes necessary and our only hope, it ought always to be proposed; for the same reasons, in cases where it is not necessary, it ought not to be thought of; and where it cannot be of use, it ought not to be done.

The intestinal tube, whether within the belly in its natural situation, or thrust forth from it in the form of hernia, is liable to diseases whose symptoms are peculiar to itself. Where there is no hernia, nobody doubts concerning the nature of the case; but where there is one, from the similarity of the symptoms, it always takes the blame; often deservedly, sometimes much the contrary.

* I mean of the operation considered abstractedly.

In the case of old, unreduced hernias, there is no reason why the portion of intestine, forming such complaint, should be exempt from such distempers as the canal is liable to: on the contrary, it is reasonable to suppose, that by such unnatural situation and confinement, it would become rather more liable. But be this as it may, certain it is, that inflammation of the intestine, violent distention of it, with loss of peristaltic motion, and stoppage of stools, is sometimes the case in a hernia where the abdominal tendon has no share in the mischief; and as certain it is, that in such case the operator can do no good. In some instances this may, by attentive inquiry, be learned, and the operation thereby preserved from a disgrace: in others, it can only be known by its proving unsuccessful.

When the disease is the mere consequence of stricture, and the gut, previous to such stricture, was free from distemper, it seldom, I might almost venture to say never, happens: but that the setting it free is followed by a discharge per anum, especially if such intention be properly assisted. But when the disease was originally in the intestine, and the intestine either not bound by any stricture, or a stricture the mere consequence of the previous distemper of the gut, it most frequently happens that such discharge does not follow the operation, nor is obtainable by any means after it. This I have always regarded as a characteristic mark of the true nature of the malady; to which I think, from what I have seen of those cases, I might add another,

which is the great difficulty, and, in some cases, impossibility of keeping the reduced intestine (after the operation) within the belly — a circumstance which I have seen sometimes to be absolutely impossible. In the cases where all the mischief arises from the mere prolapsus and stricture, the returned intestine becomes immediately pervious, and enjoying its peristaltic motion, keeps its place, and does its office; but where, by previous distemper, it is rendered impervious, and deprived of its motion, it cannot execute its office, it remains violently distended, and is, with great difficulty, kept within the belly, of which I could give many instances. This is, on several accounts, a matter of importance, both to patient and surgeon: with regard to the former, it is not merely the alarm, anxiety, horror, and pain, which necessarily attend an operation of such kind, and of such serious consequence, and which, of themselves, are surely enough: but the distemper not residing in, nor being produced by the stricture, the necessary symptomatic fever attending such an operation must, in the nature of things, be a circumstance of additional hazard: and with regard to the surgeon, the difficulty of returning the distended intestine, and of keeping it in the belly after it has been returned, together with the most frequent, and indeed most probable, event of such case, render it very unpleasant, and what every man would choose to avoid. No man can command success; but every man would wish to be in the way of it.

CONGENIAL HERNIÆ.

The difference between these and other ruptures, is not a matter of mere anatomical speculation: there are in the former several particularities which require a practitioner's very serious attention, and which an operator ought always to be aware of.

The sac of a common hernia, every one knows, is formed by the protrusion of the peritoneum, through the natural opening in the tendon of the external, oblique muscle of the abdomen. This sac, at first, extends no further than the groin, but is, by means of its contents, gradually pushed lower and lower until it gets into the scrotum. It always lies anterior to the spermatic vessels, and is enveloped in the cellular membrane, which makes the tunica communis of the said vessels, forms a cavity perfectly distinct from the tunica vaginalis testis, and never does or can contain the testicle within it.

In the congenial hernia, the case is different: in this, the sac is not formed by the unnatural protrusion of a portion of the peritoneum, which ought to have remained within the belly, but is made by the unclosed vaginal coat of the testicle; consequently the said sac, constantly and necessarily, contains within it the testicle, together with whatever else may have passed from the abdomen to constitute the hernia, and which parts must therefore be in contact with the testicle.

From this particularity result some circumstances very necessary for a practitioner to be acquainted with. Such are the following:—

1. It sometimes happens, that, in infants, a portion of intestine slips down along with the testicle, prevents the closing of the tunica vaginalis, and thereby constitutes the disease.

2. It sometimes happens, that a portion of gut only comes down, the testicle never passing forth from the abdomen, or remaining in the groin, and falling no lower.

3. In this species of hernia a stricture, or strictures, are sometimes met with, which are formed merely by the contraction or coarctation of the neck of the vaginal coat or sac, independent of the abdominal tendon. And,

4. The parts contained in a common hernia are liable to contract cohesions with each other, or with the sac; but in the congenial both omentum and gut are liable to become connected with the testicle; which connexion will, sometimes, demand all the judgment and all the dexterity of an operator. So that, nice and delicate as the operation of a bubonocoele is in the most simple and common case, it becomes much more so in the congenial rupture.

CASE XIV.

A BOY, about fourteen years old, was taken into St. Bartholomew's hospital for a strumous,

lumbal abscess, the matter of which had made its way out in the upper part of the thigh. The discharge was great, and the boy sinking apace.

While he lived, I took notice of a particular appearance on one side of the scrotum.

The spermatic process, at its exit from the belly, was large and full, and plainly contained something which should not be there: immediately below the fullness, the process was of little more than its natural size; but just above the testicle, it was again considerably enlarged, and had the same feel as above.

The true state of the case remained in doubt till the boy died, at which time both the swellings were become manifestly less than they had been.

I opened his body, and examined the parts with some care. The tunica vaginalis testis was open to the abdomen, and contained a considerable portion of omentum, which portion reached quite down to the testicle, but did not adhere to it: in the mid-way, between the abdominal opening and the testis, the hernial sac was so contracted, that the piece of caul, embraced by the contraction, was not extricable by any force, and was pressed into a firm, hard substance: above and below, it was soft and expansile, but void of fat, as in all emaciated subjects. This hernia, therefore, added to its other particularities, must have been incapable of reduction without an operation.

Much about the same time, Mr. Reiley, a very ingenious gentleman, who was then under me

at St. Bartholomew's, showed me a congenial hernia in a child he had then in dissection, and in which a portion of intestine was begirt in the same manner, so as to be perfectly inextricable, but by division of the part.

Had the child lived, and, at any time, been under a necessity of submitting to the operation for a bubonocoele, this stricture, made by the sac only, and independent of the abdominal tendon, might have proved a very embarrassing circumstance in the operation, and have occasioned a difficulty which might not have been foreseen; indeed, upon a view of it after death, it appeared wonderful, how the intestine had executed its office during the child's short life.

CASE XV.

THOMAS LEVER, a lad about seventeen years old, was sent to St. Bartholomew's by Mr. Gray, of Colchester. His complaint was a rupture, which prevented his getting his bread, and which nobody in the country had been able to reduce.

The account he gave of himself was as follows: That he had had the rupture as long as he could remember; that it had always been down in the day, and up in the night, until within about six months past, when he had been thrown over a horse's head, and bruised against the pommel of the saddle; that the blow gave him so great pain at the time, as to occasion his swooning; that the pain continued some hours, and was

followed by inflammation and swelling, which lasted some days; and that, from that time, he had never been able to get his rupture up.

The scrotum was large and full, but not at all tense: it plainly contained a portion of intestine, but there was no symptom, nor any appearance of the smallest degree of stricture. Upon attempting reduction, some part of the gut passed easily and freely into the abdomen, but a considerable portion of it remained, nor could by any means be made to follow. The testicle was very distinguishable below, and seemed to be of its natural size, and in a natural state, except that from the epididymis there proceeded a small, hard body, which body became tight when the returnable part of the gut went into the belly, and seemed to be what hindered the return of the whole. The boy was in perfect health, had no obstruction to his discharge per anum, nor any complaint relative to the intestinal canal. A part of the intestine was, as I have already said, returnable with the greatest ease; but even this would not remain a moment after the finger which returned it was removed, not even in a supine posture. A complete reduction was found impracticable—the parts were in such a state, that no benefit could be proposed from evacuation of any kind. To put a truss on was not only useless, but mischievous; and to leave a boy of seventeen, who was to get his bread by hard labour, with his scrotum loaded with intestine, liable, by every exertion, to be increased, and by

any inflammation to become strangulated, could not be thought of.

It was therefore, after very mature deliberation, deemed advisable to give him the very probable chance of a cure by an operation.

The very easy return of part of the gut into the belly convinced me, that I must not expect to find any fluid in the sac; and the boy's own account satisfied me that the hernia was congenial, and had the tunica vaginalis for its sac.

I made my incision very cautiously, and found both these circumstances to be true. In the bag was a small portion of the ileum, and that part of the colon called the cæcum, with its appendicula vermiformis: the former was loose, but the latter was adherent to the epididymis and testicle. It took some little time to separate these connexions in such manner as to injure neither of the parts; but when that was accomplished, a very small division of the tendon served to obtain a complete reduction of the whole, and the boy went home well in about six weeks.

If this lad had not undergone the operation at the time he did, and inflammation with stricture had, at any future time, attacked him, his chance of preservation would have been but small. The adhesion would have rendered reduction impracticable; but this not being known, would have at least occasioned a waste of time in unnecessary, fruitless attempts, &c; unless it may be supposed that, after such attack, the intestine could be

rendered pervious and capable of executing its office by means of purging and stimulating medicines (which in this situation of things I am not much inclined to believe), it is clear, that nothing but the operation could have served him; which operation (the circumstance of adhesion not being known) would not in all probability have been proposed one minute too soon. Besides which, when all the parts were got into a state of inflammation, the separation of the cohesion might not, perhaps, have been executed so readily.

A case, in some degree like to this, was in St. Bartholomew's about a year ago, under the care of Mr. Younge. It was in a boy about eleven years old. His scrotum was much enlarged, and contained something of considerable size; but there was neither pain, inflammation, tension, nor impediment in going to stool. Notwithstanding the absence of all bad symptoms, the boy, from the mere size of the tumor, was prevented from doing any thing either by way of exercise or work.

The operation was performed: the hernia, which was congenial, was both intestinal and omental. I am sure I am within the truth when I say, that there were ten different adhesions of the omentum to the sac, and two to the testicle: nor was this all, for the upper part of the sac was so narrow, that it might well have been mistaken for a stricture made by the tendon.

Had the portion of intestine in this case been at any time increased, so as to have produced a

stricture, bad symptoms would soon have come on, and what trouble might not have been expected from parts so circumstanced, not one of which could have been known previously to the operation.

A sudden attack of great pain in the belly, attended with sickness and vomiting, and an incapacity of going to stool, imply the probability of a rupture being the cause; especially if the person so attacked either has at that time, or has had, one.

Pain in the belly, nausea, vomiting, and constipation, are the general symptoms of an obstruction in some part of the intestinal canal, and denote, among other things, a perversion, alteration, and, perhaps, sometimes, cessation of its peristaltic motion. They do not indeed point out what the particular cause may be; but let it be what it may, if it be not soon removed, the patient must sink.

An incarcerated hernia, as it is called, is a disease caused by such stricture made on a part of the intestinal canal, as not only stops its proper motion, and prevents the passage of the fæces through it, but also hinders the circulation of blood through its vessels, and very soon induces a mortification.

The same symptoms have sometimes been produced by an inflammation, or by a spasmodic affection of the same part in persons who, if they

have had a hernia, have not had any stricture in it; and also in persons who have had no hernia at all.

The great and material difference between the two cases is, that in the one the symptoms are occasioned by an affection of a part of the intestinal tube thrust forth from its natural situation within the belly, and begirt by a stricture; and in the other, they arise from an affection of a part of the same canal, not begirt nor thrust forth, but remaining in its proper place. The general complaints attending each of these diseases are so alike, and are so very difficult to be distinguished from each other, that whenever they appear to any violent degree, the places in which herniæ make their appearance, ought always to be inquired into or examined, more especially in women; for although the symptoms resemble each other so much, the causes of them are materially different, and render one an object of surgery, while the other is not at all so. Whoever reflects on these facts must see the propriety, or indeed the necessity, of such inquiry as may determine the true nature of the malady; that a rupture, if it be the cause, may be immediately reduced; or that not being the case, that the *passio illiaca* may be properly treated.

These circumstances are such, that the hazard or safety of the patient often depends upon them, and therefore require the very serious attention of the practitioner: but material as they are, they

are not all: there are others which equally demand his regard^p.

A rupture doth not preclude or prevent inflammation or spasm, or whatever else may be the cause of mischief, from attacking any other part of the intestinal canal not included within the hernial sac; neither doth it prevent the same kind of evils from falling on that part of the intestine which is within the sac, and thereby producing mischief independent of the rupture, although affecting the part within, or causing it. And it also sometimes happens, that persons afflicted with unreduced or irreducible ruptures, are rendered incapable of discharging their fæces per anum, by causes which have not the least connexion with or dependence upon the rupture, or the intestine contained within it. Thus it becomes a surgeon's care to endeavour to be able not only to know when a hernia is the cause of bad symptoms, but also when it is not; as his conduct upon these different occasions must be very materially different: for, on the one hand, if the mischief arises from the intestine being bound by a stricture, nothing but the reduction of it by the hand, or the setting it free by the chirurgic operation, can preserve the patient; but on the other, if the symptoms proceed from another cause, even though the

^p The observation of Platner, who says, "*Nec facile interveniuntur notæ quæ ostendunt ex qua occasione intestina laborant,*" is strictly just and true.

portion of intestine within the hernia should be the immediate seat of the evil, the attempts for reduction will be painful and vain, the operation at best useless, and most probably prejudicial; and if the seat and cause of the mischief be not within the rupture, both the last-mentioned attempts become thereby still more improper, more useless, and more pernicious.

CASE XVI.

AN old gentleman, who had for many years had an irreturnable rupture of the mixed kind, and which I had often seen, was seized with the symptoms of an obstruction in the intestinal canal.

He complained of great pain in his whole belly, but particularly about his navel. He was hot and restless, and had a frequent inclination to vomit; his pulse was full, hard, and frequent; and he had gone, contrary to his usual custom, three days without a stool.

I examined his rupture very carefully; the process was large and full, as usual, but not at all tense or painful upon being handled; his belly was much swollen and hard, and he could hardly bear the light pressure of a hand about his navel. Upon mature consideration of the whole, I was of opinion that his rupture had no share in his present complaints. But as some of his symptoms resembled those of a stricture, I desired that more advice might be had. A

physician and surgeon were called: I gave them an account of what I had seen of the case, of my opinion concerning the irreducibility of the rupture, and that it had no share in the present complaint: at the same time desiring my colleague to examine for himself. We tried at reduction without success, but he thought that there was still a stricture. The doctor ordered bleeding, clysters, and cathartics: the last were immediately rejected by vomit, and the clyster came away without any mixture of fæces. Bleeding was repeated *ad deliquium*; the tobacco-smoke was injected, but all to no purpose. The operation was proposed; but as the case did not appear to me to require it, I could not second the motion: it was, however, mentioned to the patient, who would not consent unless I would say that I thought it necessary, and believed it would be successful: I could not say either, because I believed neither. Every thing else that art could suggest or practise, was tried; but on the sixth day he died.

As it had been supposed that I was wrong and positive, I was very glad that his friends chose to have him opened.

The hernial sac was thick and hard, and contained a large portion of omentum, a piece of the ileum, and a portion of the colon, all perfectly sound, free from inflammation or stricture, and irreturnable only from quantity. But the intestine jejunum was greatly distended, highly inflamed, and, in some parts, sphacelated.

CASE XVII.

JOHN DEWELL, a man about thirty, was brought into St. Bartholomew's, labouring, as was supposed, under an incarcerated hernia. He had not had a stool for three days, although he had taken both purges and clysters: he vomited almost incessantly, his pulse was hard and frequent, but not full, and his countenance bespoke death.

He had a rupture; it was on the right side, was clearly intestinal, was soft, easy, occasioned no pain upon being handled, and seemed to be capable of reduction; but after many trials, I found that I could not accomplish that end, notwithstanding I used my utmost endeavours; all which gave the man no uneasiness, and therefore satisfied me, that his symptoms did not arise from his hernia, which was also the patient's own opinion.

Mr. Nourse coming into the ward, I desired him to look at the man: he thought that, notwithstanding the seemingly quiet state of the rupture, a small portion of gut might be so engaged, as to cause his present mischief, and therefore that the operation was warrantable and proper.

Supposing it to be right at all, it could not be done too soon, and therefore we set about it immediately.

The hernial sac was formed by the tunica vaginalis: it contained a portion of intestine

ileum, which had contracted a slight cohesion with the testicle, but was so perfectly free from stricture, that, when we had loosened it from its connexion, we returned it into the belly without dividing the tendon.

I was indeed afraid that the man would have died before we could have got him to bed, but he lived till the next day.

A portion of the colon within the belly had been in a state of inflammation, was now plainly mortified, and quite black.

CASE XVIII.

I WAS desired to be present at the opening of the body of a gentleman, whose disease and death had occasioned some altercation among those who had attended him.

The account given of him while living was, that to the age of fifty-six he had enjoyed an uninterrupted state of health.

That, at the age of forty, he discovered a rupture, for which he immediately took advice, and put on a truss. That the truss not answering the purpose, he soon threw it aside, and suffered his rupture to take its course. That it gradually increased until it became both visible and troublesome. That he then applied to Mr. Sainthill and Mr. Samuel Sharpe, both of whom endeavoured to reduce it, but in vain, and both advised him to wear a suspensory bag, which he, from that time, had constantly done. That from that time he had never complained of any unea-

siness but what was occasioned by its mere weight. That he very seldom missed having a stool every morning. That about two years before his death, he began to complain of frequent pain about his bladder and fundament. That these pains had affected him near three months before he found any alteration in his fæcal discharge; but that from that time he had been constantly costive; and for the last six months had never passed a stool without a very stimulating purge, and even then with great difficulty. That he had frequently taken advice, had a variety of medicines prescribed, from none of which he ever reaped any other than the temporary benefit of purging. That in all this time no alteration had ever been found or perceived in his rupture, either regarding its size, or any other circumstance. That for seven or eight weeks before his death, he had worn a very morbid aspect, was become exceedingly emaciated, and had totally lost all appetite; his pains also being more frequent and more acute. And that, for the last week, he neither had, nor could obtain, any the smallest degree of stool.

This symptom had been, by those who were called to him last, attributed to his hernia; and the operation had been much pressed on one side, and objected to on the other.

The hernial sac was old, large, and thick; its contents (omentum) much hardened; and a considerable portion of the intestine ileum both perfectly sound and unaltered, and not bound by the smallest degree of stricture. The stomach,

liver, spleen, and small intestines, without blemish, but considerably distended; but about five inches of that part of the colon nearest to the rectum was so contracted, that it was quite impervious; and so hardened, that it was like nothing so little as a portion of gut.

CASE XIX.

A MAN, about forty, was brought to St. Bartholomew's with a supposed incarcerated hernia.

He had a very swollen, tight belly, a frequent pain and vomiting, and no stools; and this had been the case for three days, during which time very proper attempts had been made both for reduction and passage.

Neither the scrotum, nor the parts about the groin, seemed to indicate that the seat of the evil was there, although the parts were certainly too tense, and a portion of intestine was palpably in a hernial sac. It was Mr. Crane's week, who was out of London; and Mr. Edmund Pitt, who acted for him, desired me to assist in the operation, which was thought necessary, as no discharge per anum could be procured.

The hernial sac was of the congenial kind, and contained a portion of small intestine, which did not seem much, if at all, bound by the tendon, but it was so strongly and universally adherent to the neck of the sac, that it was impossible to think of separating it. A very unpleasant circumstance this. All that could be done was, to set it free from all possible stricture, and if stools

could be procured, to act afterwards as might be necessary.

Every means, of purge, clyster, &c. was used, but no passage procured; and on the fourth day from that of his admission, he died.

The piece of intestine, in the hernia, was that part of the ileum nearest to the colon, and which was in good order, only adherent; but higher up, toward the jejunum, it was absolutely impervious for more than three inches in length.

I have seen two other cases so nearly similar, that I need not repeat them.

The following case has some circumstances which may possibly be worth the reader's notice.

CASE XX.

THOMAS MARSHALL, aged fifty-four, was brought into St. Bartholomew's hospital, on the 25th of May, 1764, with a large, painful, tumefied scrotum. The account which he gave of himself was—

That, in his childhood, he had been afflicted with a gut-rupture, for which he had worn a truss until the rupture was supposed to have been cured. That he had always been a regular, temperate, and hard-working man. That, on the 23d of April, he felt, while he was at work, a sudden, violent attack of a colic-pain, which, in a few hours, was followed by a slight purging. That, his pain not ceasing, he took some tincture of rhubarb, from which he had three or four more motions. That, in the eve-

ning of the second day, he found a considerable swelling in his groin and scrotum, on the side where his rupture had formerly been. That, on the third, he went to work again, although he had much pain in his belly, and a purging. That, on the fourth, he took something of the cordial kind, given him by a neighbour, and staid at home all that day and the next, during which he was pretty easy, but had several loose stools. That, on the seventh day from that of his being first taken ill, he went to work again, but was again attacked with severe pain and frequent vomiting: immediately after which, he found the swelling in his scrotum considerably increased. That, from this time, he was so much and so constantly uneasy, as to be obliged to keep his bed, it being the only place in which he could put himself in a tolerably easy posture. And that during the whole time, from the 29th of April to the 25th of May, he had very seldom had less than two stools every day, often more.

The man was much emaciated, had a quick pulse, a hot skin, and considerable thirst: the scrotum was now very much on the stretch, began to put on a purple kind of colour, and had, at the same time, a watery load in its cellular membrane; but palpably contained a large quantity of fluid in the tunica vaginalis testis. The whole tumor had a pyriform kind of figure; the spermatic process was hard and large, and clearly contained something which passed into it from the belly; but which something did not descend below the

upper part of the scrotum, while the lower part of the same was so distended, as to be half way down the thigh, and was palpably filled by a fluid.

The state of the parts were such, that it became necessary to do something, lest they should mortify. I made, with all possible caution, an incision through the loaded integuments into the cavity of the tunica vaginalis, and gave discharge to near a quart of the most offensive brown liquor: upon the discharge of this, the lower part all subsided, but the upper remained the same. I then, with a crooked probe-pointed knife, divided the whole from below upward, and found that the bag containing the fluid was a congenial hernial sac, whose internal surface had all the appearance of being mortified; and that the body, in its upper part, was a portion of intestine. This portion had, on its surface, several black and truly sphacelated spots; some larger, and some smaller; but the gut was still intire, and appeared moderately distended with wind. I passed my finger through the opening in the abdominal muscle, and could not find that it made the smallest degree of stricture; but found, at the same time, that the intestine was so firmly adherent to the sac, that, in its present state, it was equally impossible to return, as to detach it. That night the man had two good stools; and next morning, when I expected to have found him dead, he was considerably better.

I again examined the parts, to see whether the intestine could be returned; but again found

that, had it been advisable, it was impracticable. The third day he was still better, and had a figured stool.

As it appeared highly improbable, that the mortified spots on the gut should cast off without leaving a breach in the intestine, I thought that the best that could happen, would be a discharge of fæces through the wound, at least for a time: but I was mistaken, for at the end of five days, during which he had taken the bark freely, all the eschars cast off, by a florid good incarnation; and, leaving no breach at all, the man became easy, cheerful, and began to take nourishment.

From this time, the portion of intestine in the groin seemed daily to retire upward, and become less visible; and I began to entertain hope that we should see a very fortunate termination of this very miserable case. For the space of ten days he took the bark freely, and seemed every day better and better; but at the end of that time, he became again feverish and languid. Instead of his usual freedom of stool, none could be procured, and he died.

The prolapsed gut had retired so much, that, had the man lived, I make no doubt that it would have been included within the sore, and been firmly healed over: the places which had been sphacclated, were quite healed; but about four inches of that part of the intestine, which was just within the belly, was so contracted as to become quite impervious, and perfectly scirrhous.

The intelligent will, I make no doubt, re-

mark on some parts of this case; and therefore I shall trouble him with one only, which is, that sphacelated spots on the surface of an intestine are not always, and absolutely, a prohibition against returning such intestine into the belly.

CASE XXI.

I WAS desired to meet Dr. De Valangin, Mr. Godman, and Mr. Boigue, in the case of a hernia with stricture.

The patient was a man about the middle of life; his rupture was, I think, on his left side; and when I saw him he had not had a stool for several days, though the usual means had been used. Upon examining the parts, they made as bad an appearance as possible: they had been tumid, full, and inflamed; they were now sunk, flaccid, and completely mortified: notwithstanding which, I could not say that the man appeared so near to death as such an appearance would indicate; but at the same time so materially ill, that I could not suppose that he could receive any benefit from the art of surgery.

The true intent of the operation, that of setting the gut free from the stricture, was of no consideration here: the stricture had done all its mischief: if the man was to live, the mortified parts must cast off; and if he was to die, I thought it was better that we should not even appear to have a share in his death, by an opera-

tion which I thought could not be serviceable, and might be misconstrued.

This was truly my opinion, and I gave it as such. But, overcome by the importunity of the patient's wife, and to avoid seeming to be either careless or brutal, I was prevailed on to divide the parts. The scrotum, integuments in the groin, and hernial sac, were completely and truly mortified; the portion of intestine, which certainly was not less than three inches, was in the same state, sunk, empty (having burst), and as black as a coal; the offence was terrible, but the man suffered no pain, as the parts were totally void of sensation.

I contented myself with merely dividing the scrotum and hernial sac, and left the rotten intestine as it was, lying in the groin on the outside of the ring, concluding that a very short space of time would determine the poor man's fate, and that not favourably. The gentlemen whom I had met continued to attend, and to take care of him; the mortified parts cast off; he discharged his fæces through his wound for some time, but that, in no great length of time, ceased; and within the space of a month, I saw him in very good health, discharging all his fæces per anum, and having only a small, clean, and healing sore, where his wound had been. How the fæces passed from the ileum to the colon, after the mortified parts were thrown off, I am, considering the size of the portion of gut, really at a loss to account for; but very sure I

am, that if the advice given by all writers, in these cases, to cut off the piece of mortified intestine, and fasten the sound part to the upper part of the wound, had been followed, the man would have passed the remainder of his life in a much more unpleasant manner.

HERNIA VESICÆ URINARIÆ.

A HERNIA formed by a protrusion of a portion of the urinary bladder through the opening in the abdominal muscle into the groin or scrotum, is a disease sometimes, but not very frequently, met with.

It has been taken notice of by many writers of character, and has been accurately described by Mons. Verdier, and Mr. Samuel Sharpe.

Whoever is acquainted with the structure and disposition of the peritoneum, without which knowledge he cannot understand a hernia at all, knows that the bladder is only covered in part by that membrane, and that its inferior and lateral parts lie on the outside of it, in the tela cellulosa.

That portion of the bladder which is liable to this protrusion, is not covered by the peritoneum; consequently, when it is thrust forth, it does not carry with it any part of the said membrane; and therefore cannot have what is called a hernial sac; in which it differs from every other kind of hernia.

The two following are the only cases I ever met with.

CASE XXII.

A POOR fellow, who worked with a farmer at Islington, came to St. Bartholomew's with a large, troublesome swelling in his scrotum. The tumor was large, tense, of a pyriform figure, palpably contained a fluid, gave no pain but from its weight when full, and had every mark of a hydrocele, except that the testicle was perfectly distinguishable at its bottom.

While I was hesitating concerning this circumstance, the man said, 'Sir, I can get rid of it all by pissing, but it fills again in a few hours, especially if I drink.'

Upon my seeming to disbelieve what he said, he took up his scrotum, and squeezing it together with some violence, discharged the whole by the urethra.

CASE XXIII.

A BOY, about six years old, was seized with an acute pain about the region of the pubes: it lasted near an hour and a half, and suddenly ceasing, he became perfectly easy. During the time his pain lasted he could not discharge a drop of water, though he endeavoured so to do; but as it ceased he pissed freely. In a few days after, a small tumor was discovered about the size of a pea, in the spermatic process, just below the groin: it gave the child no pain, and

therefore no notice was taken of it. By slow degrees it descended lower and lower, and as it descended, it seemed to increase in size. When it had got to the upper part of the scrotum, it was observed to be considerably enlarged; and the boy now found himself more frequently urged to make water, but without pain or difficulty. He was examined by a practitioner or two in his neighbourhood, who, not knowing what to make of it, advised the letting it alone. Within the space of five years it got down to the bottom of the scrotum, and when it was there it was observed to increase much faster than it had done before. The boy was at a considerable distance from London, and it ill suited his friends to send him thither, so that another year passed before he was sent up; which was done at the age of thirteen, the swelling being now troublesome upon any motion.

Some, who first saw him, deemed it a scirrhus testicle, and advised castration, to which the friends of the boy would not submit.

From the most careful examination I could make, I could not think it was formed by the testicle; but on the other hand I could not find any testicle on that side.

The swelling was perfectly equal in its surface, was indolent, had a stony, incompressible kind of hardness, was troublesome from its weight, but never occasioned pain in the back or loins: it had all the appearance of being dependant from the spermatic process; which process, though it had neither the feel, nor the ap-

pearance, of being diseased, yet was larger than it should be, and than that on the other side. The perfect equality of the tumor, its being perfectly free from pain, even when pressed hard, and its extreme incompressibility, led me to believe it was not the testicle; but this was merely negative information. The trouble it now gave the boy, and its disposition to increase, seemed to authorise its removal; and the state both of the part and of the child were no prohibitions. I therefore proposed and undertook it. I made an incision through the skin and cellular membrane, the whole length of the process and scrotum, by means of which I discovered a firm, white, membranous bag, or cyst, connected loosely with the cellular membrane, in the same manner as a hernial sac. I dissected all the anterior part of this bag quite clean, and found that, as I traced it upward, it became narrower, and seemed to proceed from the upper part of the groin. This determined me to try if I could not clear it from its posterior connexion; in doing which, I discovered a testicle which lay immediately behind the body forming the tumor, and was small, flat, and compressed.

The dissection of this, and of the spermatic chord from the bag and from its neck, which I was obliged to do in order to preserve the testicle, took up some time, and gave me some trouble; but when I had finished it, I found that the cyst was dependant from, and continuous with, a membranous duct about the breadth of

the largest wheat-straw, or what it was more like to, a human ureter, which passed out from the abdomen through the opening in the muscle.

When I had perfectly cleared this duct from all connexion with the spermatic chord, I cut it off immediately above the tumor; and upon the division there issued forth about four ounces of a clear liquor; and the mouth of the cyst, expanding itself, disclosed a stone, exactly resembling what is found in the human bladder.

As there was not the least appearance of fluid, either in the bag or in its neck, before the division, its immediate effusion, and the appearance of the stone, induced me to believe, that the case was a *hernia cystica*. In order to be certain, I staid some time; and when I thought that some quantity of urine might have passed from the kidneys, I desired the boy to try to make water: he did so, and a large stream of urine flowing through the wound, instead of the urethra, put the matter out of all doubt.

He was dressed superficially, had no one bad symptom, though a portion of the bladder was totally removed: his urine came through the wound in his groin for about a fortnight; but as that wound healed, it resumed its natural course, and the patient has remained free from complaint ever since, except that the natural size of his bladder being lessened by the extirpation of a part, he is obliged to discharge his urine rather more frequently.

CASE XXIV.

AN OVARIAN HERNIA.

A HEALTHY young woman about twenty-three was taken into St. Bartholomew's hospital on account of two small swellings, one in each groin, which for some months had been so painful, that she could not do her work as a servant.

The tumors were perfectly free from inflammation, were soft, unequal in their surface, very moveable, and lay just on the outside of the tendinous opening in each of the oblique muscles, through which they seemed to have passed.

The woman was in full health, large breasted, stout, and menstruated regularly; had no obstruction to the discharge per anum; nor any complaint but what arose from the uneasiness these tumors gave her, when she stooped or moved so as to press them.

She was the patient of Mr. Nourse. He let her blood and purged her, and took all possible pains to return the parts through the openings through which they had clearly passed out.

He found all his attempts fruitless, as did Mr. Sainthill and myself; and the woman being incapacitated from getting her bread, and desirous to submit to any thing for relief, it was agreed to remove them.

The skin and membrana adiposa being divided, a fine membranous bag came into view, in

which was a body so exactly resembling a human ovarium, that it was impossible to take it for any thing else; a ligature was made on it, close to the tendon, and it was cut off. The same operation was done on the other side; and the appearance, both at the time of operating, and in the examination of the parts removed, were exactly the same.

She has enjoyed good health ever since, but is become thinner and more apparently muscular; her breasts, which were large, are gone; nor has she ever menstruated since the operation, which is now some years.

A
TREATISE
ON
THE HYDROCELE,
OR
WATERY RUPTURE,
AND
OTHER DISEASES
OF THE
TESTICLE, ITS COATS, AND VESSELS.

ILLUSTRATED WITH CASES.

PREFACE

TO THE

SECOND EDITION.

THE following tract, as the title expresses, is designed as a supplement to one published a few years ago; one of the objections to which was, that it was defective in matter, and ought to have comprehended the false herniæ; they being as real diseases, and requiring chirurgical assistance as much as the true.

This deficiency I have now endeavoured to supply in the best manner I am able.

When I began to put these papers in order, I did not think they would have run to such a length; and when they were finished, I did not know how to shorten them without rendering them less explicit.

I am perfectly sensible that some parts of them will appear prolix and diffuse, and that such manner of writing is in general very justly objected to; but yet cannot help thinking that sometimes it may be excusable, or even necessary.

When application is made to the judgement merely, and information is intended to be conveyed to many people of different capacities, it may become necessary to set the same object in several different lights; and to repeat the same thoughts many times in different words: to those who have not been much conversant with the thing treated of, a studied brevity would become a perplexing obscurity. However satisfied such

readers might be with the style of the writer, they would not be made sufficiently acquainted with the subject : they might be pleased, but they would not be informed.

I should indeed be very sorry to have conveyed my meaning in such manner as to disgust the judicious; but as my principal intention was to instruct the unknowing, my chief aim has been perspicuity. If the learned and critical are not displeased, I shall be glad; if the ignorant gain any knowledge, I shall be much more so. The character of an elegant writer I make no pretension to; that of a skilful surgeon, and of a man who has done some good in the way of his profession, I should be extremely glad to deserve.

With regard to this second edition, all I have to say is, that it has cost me some time and trouble; that it contains many additions to the former; and, that I hope the reader will find it, not only a more correct, but a more instructive book.

A
TREATISE
ON THE
HYDROCELE.
&c.

SECT. I.

THE various diseases comprehended under the general term HERNIA, have, by surgeons, been divided into two classes; one of which they have distinguished by the epithet *true*, the other they have called *false*, or *spurious*.

Under the first, they have ranged all those tumors, which are produced, either by the *descent*, or *protrusion*, of some of those parts which should naturally be contained within the cavity of the abdomen; but which, by being displaced from their proper situation, form swellings in the navel, groin, belly, scrotum, and thigh.

By the second, they mean all such diseases of the testicles, their coats, and vessels, as proceed from, or are accompanied by, the induration, enlargement, or other morbid affection of such parts; or occasion the lodgment, or accumulation, of extravasated fluid within them.

So that what are generally called *true herniæ* are tumors, occasioned by the removal of certain parts from their proper and natural situation, such parts still remaining, in general, sound, and free from disease; while those termed *false*, are original disorders of the parts themselves, in which they are seated: a distinction which is invariably true, and very necessary to be attended to, by all who would understand the real nature of each. A part of the intestinal canal, or of the omentum, the stomach, uterus, or bladder, are what most frequently make the contents of the former; a varicous distension of the spermatic vessels, extravasated blood or water within the membranes either of the testicle or of the spermatic vessels, an inflammatory enlargement, and a scirrhus or cancerous state of the testis itself, constitutes the latter.

The *true herniæ* receive their distinguishing appellations, either from the particular part of the body in which the swelling makes its appearance, or from what is contained within such tumor; and are therefore called *inguinal*, *scrotal*, *umbilical*, and *ventral*; or intestinal and omental ruptures. The spurious derive their names either from their supposed contents, as the *pneumatocele*, *hæmatocele*, and *hydrocele*, or from the alteration made by the disease in the natural structure of the parts concerned, as the *varicocele*, *cirsocele*, and *sarcocele*: to which some have added that inflammatory defluxion on the testicle, commonly called *hernia humoralis*.

The *pneumatocele* is a mistake; there is no tumor of this kind, and in this situation, in a living animal. It is indeed particularly described by many writers, both ancient and modern, and said to be a disorder to which infants are particularly liable: but the complaint so described, and which nurses and ignorant people do still call a *wind-rupture*, is not what they take it for; neither is it produced by wind: it is either a true *intestinal hernia*, or a species of hydrocele; which will be taken notice of hereafter. The *varicocele* (which is an enlargement and distention of the blood-vessels of the scrotum) is very seldom an original disease, independent of any other; and when it is, is hardly an object of surgery.

The *circocoele*, or varicous state of the spermatic vein, though it be really a disease, and sometimes very troublesome to those who are afflicted with it, yet is seldom capable of much relief, beyond that of a suspensory bandage.

S E C T. II.

OF THE HYDROCELE IN GENERAL.

THE term *hydrocele*, if used in a literal sense, means any tumor produced by water; but surgeons have always confined it to those which possess either the membranes of the scrotum, or the coats of the testicle, and its vessels.

The first of these, *viz.* that which has its seat in the membranes of the scrotum, is common to the whole bag, and to all the cellular substance which loosely envelopes both the testes. It is, strictly speaking, only a symptom of a disease, in which the whole habit is most frequently more or less concerned, and very seldom affects this part only^a. The latter, or those which occupy the coats immediately investing the testicle and its vessels, are absolutely local, very seldom affect the common membrane of the scrotum, generally attack one side only, and are frequently found in persons who are perfectly free from all other complaints.

Notwithstanding the obvious and material difference between the two kinds of disease, they have by the majority of writers been confounded together; have been considered as springing from the same immediate source; and as requiring the same kind of treatment; although the one is plainly and evidently a mere symptom, or attendant on a general disorder; and the others are strictly and absolutely local complaints. This one fundamental error has been the occasion of many others. The supposition that all collections found in the membranes and coats of the scrotum and testicles are of the same general kind, has produced an infinite variety of wild conjectures concerning the particular and immediate nature and origin of them. By

^a I have seen a true anasarcaous watery distention of the cells of the dartos confined to one side of the scrotum only.

some they have been attributed to a particular indisposition of the liver, kidneys, or spleen; by others, to a natural and necessary connexion between the spermatic vessels and those of the kidney; by many the fluid has been thought to be of the urinary kind, or at least that it ought to have passed through the kidney, but that, mistaking its right way, it gets into the membranes of the scrotum and testicles^b; while others have affirmed, that all complaints of this

^b “ Supervenit quandoque ex causa aliqua externa et manifesta, ut ictu, casu, &c. Crebro vero, ex latente, et non manifesta. Quæ ab externa causa accessit, aut dextrum, aut sinistrum renem indifferenter affligit; a latente vero, et non manifesta causa originem ducens, nunquam alium quam sinistrum.”

SCHENKIUS, OBS.

“ Rene, hec malo affecto, nec officio suo probe fungente, urinæ pars quam emulgens hæc ad se pertraxit, cum ad vesicam per male affectum renem non potest descendere, per seminalem in erythroideam delabitur; hoc modo hydrocelém ingenerans.

“ Hinc apparet et abunde manifestum est, quamobrem hydrocele haud ab externa, sed a latente originem ducens, non nisi in sinistram membranam incidat; et hujus testem affligat.”

SCHENKIUS.

“ Hernia aquosa, si a causa interna et latente originem ducit, ut plurimum sinistram partem scroti occupat; serosusque ille humor, in membrana testem involvente, erythroiden dicta, colligitur: idque fit præcipue, rene sinistro male affecto; quapropter serosus humores non attrahens, et ad vesicam non mittens, per venam seminariam, quæ in isto latere, ex emulgente procedit, in membranam erythroiden delabitur.”

GUL. FAB. HILDANUS.

“ Ne serosus humor qui a rene attrahi non potest in abdomine retineatur.”

HILDANUS.

“ Si hernia fiat ex humoribus venientibus a renibus ad testiculum, cognoscitur tactu.”

LANFRANC.

kind are really symptoms of a dropsical habit: that the fluid comes from the cavity of the belly, and either passes through the peritoneum, or extends that membrane down into the scrotum^c. Many cautions have been laid down against attempting the cure of one species of this disease hastily, or without a previous course of medicine, upon a supposition that the defluxion is of a noxious nature; and that, by falling on this part, it frees the constitution from several other distempers^d. It has been described, as frequently producing a corrupted or otherwise diseased testicle^e; as being nearly allied in nature to

^c “Colligitur liquor in hypochondriis, qui facile descendit.”

FAB. AB AQUAPEND

“Aliquando descendit aqua illuc sicut descendit in hydro-
“picis.”

LANFRANC.

^d “Sæpe ego vidi multos per hernias liberatos esse a gravi-
“bus affectibus; ab empyemate, hydrope pulmonis, &c.
“unde si penitus sanetur, poterit multos morbos postea in-
“ferre.”

FALLOPIUS.

^e “Testis autem substantia, ab acrimonia humoris, successa
“temporis corrumpitur.”

SCHENKIUS.

“Sciendum est, quod in hernia illa, in qua continetur aqua
“in vagina testis, et quæ aliquantisper sit diuturna, corruptus
“est testis.”

FALLOPIUS.

“Ubi paulo diutius humor iste intus relinquitur, metuen-
“dum est ne testiculus sensim, cum eolem corrumpatur, vel
“occalescat, atque ita scirrhum, vel farcocelen, vel cancerum
“tandem sentiat.”

HEISTER.

“Ne scilicet collectum in scroto serum per acredinem pau-
“latim contractam partes, internas, et cum primis testiculum,
“corrumpat; et noxam magis periculosam efficiet.”

HEISTER.

“Notandum vero aquam in scroto non esse diu relinquen-
“dam ne a mora testis corrumpatur; vel una cum aqua adve-
“niant hernia carnea et caro concreseat.”

FAB. AB AQUAPENDENTE.

those tumors which are called encysted, whose tunics are formed out of the common membrane by mere pressure; and as being generally accompanied with a true hernia, or descent of the intestine or omentum; which last (supposed) circumstance has been gravely urged as a reason for not attempting a radical cure^f. The same wanton liberty has been taken, in assigning different seats to these disorders, as in accounting for their origin: every part which invests, or accompanies, the spermatic vessels, or the testicles, not only the tunica communis of the process, and the cavity of the tunica vaginalis (the true and real seats of one or other of these disorders) have been enumerated, but several imaginary ones have been added; firm, com-

^f The opinion of the late Mr. Cheselden on this subject is so singular, and so little consonant to truth or nature, that I shall take the liberty to repeat his words, lest his great character should mislead the unwary. In the last edition of his *Anatomy*, p. 264, he says, “The true hernia aquosa is from the abdomen, which either extends the peritoneum into the scrotum, or breaks it; and then forms a new membrane, which thickens as it extends, as in aneurisms and the atheromatous tumors: the dropsy in the cyst (for such it properly is, rarely admits of more than a palliative cure by puncture, or tapping, like the dropsy of the abdomen; and this with some difficulty, because the omentum generally, and sometimes the gut, descends with it.” Which is so far from being the case, that unless in the particular and very singular instance of a combination of an hydrocele with a congenial hernia, it never can happen; the bags or sacs of an hydrocele, and of a hernia, being in all other instances totally different; and the former never having any communication with the belly.

pect membranes have been split into lamellæ; and cysts and coats have been devised, which never had a real existence.

If all this was matter of mere speculation, and produced no mischief in practice, it would be of no importance; but, in matters of physic and surgery, this seldom or never happens: erroneous ideas of the nature, origin, and seats of diseases, most commonly are followed by improper methods of treating them. In the present case, the absurdity of the conjectures concerning these circumstances in the disorder, is fully equalled by the methods of cure which have been proposed and practised.

Upon a supposition that the extravasation of fluid was the consequence of a dropsical habit, strong purges and powerfully diuretic medicines have been prescribed; actual cauteries have been used; and ligatures and incisions made, both on the spermatic vessels and in the groin, to hinder the descent of the water from the cavity of the belly^g;

^g “ Et cum totam evacuaveris aquam, cauteriza locum quem
“ aperuisti; et fac duo cauteria punctualia in inguina, ex utra-
“ que parte unum, supra didymum; quod si non cauterizes,
“ aqua iterum redit. Sed cauteria redire materiam iterum non
“ permittunt.”

LANFRANC.

“ Et iterum redit nisi cauterizetur post perforationem.”

BRUNUS.

“ In apertione duplex est intentio, scilicet aperire et prohi-
“ bere ne rursus aqua descendat.”

FAB. AB AQUAPEND.

“ Avicennas utitur ferramentis candentibus in regione in-
“ guinis ut corrugatur pars, ne aqua posset descendere.”

FAB. AB AQUAPEND.

astringent liquors and ardent spirits have been injected, with a view to closing or soldering broken lymphatics; tedious and painful operations have been practised, for the eradication of imaginary cysts; directions have been given to evacuate the water at different times, lest the patient's strength should fail, or his health suffer, by its being done too suddenly; and the testicles being supposed to be frequently spoiled, by long laying in the water, castration has often been performed in the simple hydrocele.

Dr. Monro (the father) who is professor of anatomy at Edinburgh, and Mr. Samuel Sharp, late surgeon to Guy's hospital, are almost the only writers who have sensibly and rationally explained the true nature and theory of these diseases: to them the profession is greatly obliged for having thrown much light on the subject, and for having furnished their readers with more just ideas than any others.

“ Sin autem in rene vitium non fuerit, et defluxum plane
 “ impedire volueris, incisionem, superiore parte scroti
 “ prope inguina, fieri expedit; quandoquidem duplex chi-
 “ rurgo est scopus; prior evacuare serosum humorem, pos-
 “ terior prohibere ne de novo aqua in scrotum defluat.”

“ Et quia tota aqua in tunica illa (nempe vaginali), contine-
 “ batur, ita ut testiculus ei innataret, ne in posterum denuo
 “ descenderet aqua acu incurvato ac filo reduplicato universam
 “ hanc tunicam (præter vasa seminalia) apprehendi et me-
 “ diocriter constrinxi, atque ligavi.” FAB. HILDANUS.

SECT. III.

THE spermatic vessels, like most of the contents of the abdomen, lie behind the peritoneum, enveloped in the common tela cellulosa, or what used to be called the cellular appendix of the peritoneum. The arteries, which are two, arise from the trunk of the aorta, in the midway between the emulgent, and lower mesenteric. At their origin they are very small, and, contrary to all the other arteries of the body, they seem rather to increase in diameter as they descend. In their passage downward, they impart several branches to the cellular membrane which invests them; and before they arrive at the testicles, they are divided into four or five principal ones; one of these goes to the epididymis, the others to the testis; the latter having passed the tunica albuginea, and being convoluted in a most wonderful manner, composes the greatest part of the body of that gland: from these convolutions of the spermatic artery, the semen is secreted: which fluid is, after such secretion, immediately received by those particular vessels, which late anatomists have agreed to call the vasa efferentia. These vary in their number, in different subjects, being from ten to fifteen, more or less: when collected together they form the globus major, or larger extremity of that body, which, from its situation, is called epididymis: after this, they unite into one single tube, which being convoluted and contorted, in the most miraculous

manner, constitutes the rest of that same body : so that the whole of the epididymis, except that immediate point which is formed by the concurrence of the vasa efferentia, does really consist of one single tube, whose diameter is said, in no part, to exceed the eightieth of an inch, but which is contorted some thousands of times ; and if unravelled, and drawn out, is some yards in length. From the lesser extremity of the epididymis proceeds the vas deferens, or that tube through which the semen is conveyed from the testis toward the penis ; or, in other words, when this wonderful tube ceases to be convoluted, and puts on the appearance of one single, smooth vessel, it is then called vas deferens. This arises from the lesser end of the epididymis, enveloped in the same common tela cellulosa, in which the spermatic artery and vein are invested ; and when it has got just above the edge of the os pubis, it separates from the said vessels, and passing down behind the peritoneum, proceeds to the inferior part of the neck of the bladder, where it deposits the semen, in the receptacles appointed for that purpose, called the vesiculæ seminales.

The blood, after the seminal secretion is performed, returns back into the general mass, by the spermatic vein : which on the right side empties itself into the vena cava, and on the left into the emulgent.

While the spermatic vessels are within the cavity of the belly, the cellular membrane, in which they are enveloped, is much more lax

and tender, and is endued with larger cells, than it is on the outside of the same cavity. As they go *under* the transversalis, and obliquus internus muscle, and *through* the obliquus externus, they receive a considerable addition of cellular membrane from the adjacent parts; and, when they have passed through the tendinous aperture of the last-named muscle, they, together with their cellular tunic^b, are covered by, and enveloped in, that expansion of muscular fibres, called the cremaster.

^b The passage of the spermatic vessels *under* two of the muscles, and *through* the third, is a circumstance of much importance, and what every practitioner ought to be well acquainted with.

The common doctrine is, that in each of the oblique muscles and in the transversalis is a tendinous aperture, for the transit of the spermatic chord; and these supposed openings are called the *rings*. This is a mistake, which even some very modern writers in anatomy have fallen into: and lest their words should not convey an idea sufficiently erroneous, some of them have given us drawings of all these openings in regular gradations, above and behind each other. Nothing can be more false than such representation: the spermatic vessels do never pass *through*, but always *under* the transversalis and obliquus internus, at such distance as never to be affected by their action, or to suffer any stricture or strangulation from them. On the contrary, the spermatic chord always passes through an opening made for that purpose in the tendon of the obliquus externus; the action of which it is liable to be affected by: and when it is accompanied by a portion of intestine (as in the case of an hernia), it is this tendinous aperture which produces the stricture, the symptoms, and the hazard—a circumstance of great consequence for every man to know, who may ever be called upon to operate on a strangulated hernia.

The membrane surrounding all that part of the spermatic vessels, which is on the outside of the abdomen, is called the *tunica communis*, or *tunica vaginalis* of the chord; and is (as has already been said) merely cellular; totally void of all other cavity than its cells; firmly adherent to the surface of the said vessels, in every part; and plentifully furnished with lymphatics.

It is of very great importance to have a just idea of the structure of this part of the *funiculus spermaticus*. The old term, *tunica vaginalis*, conveyed a very false one: it implied, that the vessels were contained within it, as in a sheath, and that, if the said vessels were not there, this coat would form an empty bag, consisting of one cavity only; than which nothing can be more untrueⁱ.

This is one great source, from whence many of the errors, which have been committed in the description of such diseases, as have (or are supposed to have) their seat in this part, have sprung; and therefore I take the liberty of repeating, that

ⁱ Even M. de la Faye, whose notes on Dionis have rendered the works of the latter more useful, has fallen into the common mistake with regard to this tunic, by supposing both it and the *vaginalis* to be formed out of the same membrane, and allotting a cavity or bag to the former. “ Il faut remarquer, que la tunique vaginale et la gaine du cordon spermatique sont une continuation du tissu celluleux du peritoine, qui s’allonge pour enveloper le testicule; a l’endroit, où cette continuation s’elargit, la nature a formé une cloison qui empeche la communication qui se trouveroit entre l’intérieur de la gaine du cordon spermatique, et celui de la tunique vaginale.”

this tunic has no one particular cavity, but is a mere cellular membrane throughout its whole extent; and that it terminates, in a great measure, just above the epididymis, though a continuation of it may be traced on the surface of the tunica vaginalis testis.

The coats of the testicle are two only; viz. the tunica vaginalis, or that bag which loosely invests it, without any adhesion to it, except in one particular part; and the tunica albuginea, or that membrane, which is the immediate and proper covering of its vascular structure. A true and clear idea of these is absolutely necessary to the right understanding the diseases to which this gland is subject. In order to obtain such idea, the testicles must be examined, not only in an adult state, but in the infantine, and in that before birth also; each of these states having its peculiarities, and all tending to explain the true nature of such maladies, as it is frequently subject to.

The testicles of the human species are always formed within the cavity of the belly, and remain there until or very near unto the time of birth. While they are within the abdomen, they are covered by one coat only; which coat firmly adheres to the vascular structure of them, and is evidently derived from the peritoneum, in the same manner as the outer coat of each of the viscera of the said cavity is. Their situation, during the first months, is higher than in the latter; and as the foetus increases in size, they slip gradually lower. Within the cavity of the

abdomen, on each side, a little below the testes, is a small opening, or orifice, which leads immediately into a small but firm membranous bag, or cyst, whose upper part, or neck, passes through the opening in the tendons in the obliqui externi muscles; while its lower part or sacculus, lies on the outside of the said muscles in the groin, enveloped in the common tela cellulosa. These orifices are always open until birth; and, most frequently, for some while after; during all which space of time, the said sacculi have free and open communication with the cavity of the belly.

By means of these orifices the testicles pass from the cavity of the abdomen, through the tendinous apertures, into the sacculi in the groins; but the time in which they make this transit is by no means certain: sometimes it is just before birth, sometimes just after, sometimes they drop immediately into the scrotum, and sometimes they remain a considerable time in the groins; and it now and then happens, that they never pass through the muscle at all, but remain for ever within the belly. These are a kind of *lusus naturæ*; but in the ordinary course, they soon pass from the groins into the scrotal bags, the communication between the said bags and the belly continuing open some little time longer.

When the testicles are got fairly down into the sacculi, if the said sacculi be laid open, it will appear that the testicles are loosely enveloped by them, in such a manner as to be per-

fectly free from all cohesion, except in one part, where this bag and the proper coat of the testicle (the albuginea) are so firmly united, as to be plainly and demonstrably a continuation of one and the same membrane. And while the communication with the belly continues free and open, if the sacculi be divided from the bottom upward, it will as evidently appear, that the membrane of which they are composed is a continuation, or process of that part of the peritoneum which lines the muscles of the abdomen.

Some time after birth, the necks of these sacculi become close and impervious ; and from that time all communication between their cavities and that of the belly ceases. The time when this happens is various and uncertain ; I have seen them perfectly closed within a week, and open at the end of two months ; nor do they both necessarily become close at the same time, in the same subject.

It sometimes happens, that while these passages are open, a piece of intestine insinuates itself into one of them, and, preventing its closing, produces what Haller calls a congenial hernia ; a disease which, though a modern discovery, has always been very frequent. It also sometimes happens, that the spermatic vessels not being sufficiently closed, one of the testicles rests in the groin, just without the opening in the abdominal muscle, and by not becoming pendulous in the scrotum, the orifice of the

neck of the sacculus is not closed at all; even though no portion of gut or caul has got into it.

When these orifices have been once perfectly closed, there never is any future communication between the cavities of the sacculi and that of the belly; nor can any thing solid or fluid (however small in size or quantity) ever, after this period, pass from the one to the other. The upper part, or neck, now loses all appearance of a distinct canal; and the lower part, or sac, loosely invests the testicle, and its epididymis, without any adhesion, except in the hinder part. The inside or cavity of this sac is constantly kept moist, by the exudation of a fine fluid; which fluid is as constantly absorbed: so that while these parts enjoy a sound healthy state, the fluid is no more in quantity, than what just serves to lubricate and keep moist the surfaces of both membranes, and thereby prevent any unnatural cohesion of them with each other.

From these premises, the following inferences, serving to point out and explain the true nature and seat of some of the diseases in question, may, I think, be deduced.

1. That the sacculi, or bags, found in the groins, are originally formed parts.

2. That they are placed there for the future reception of the testicles; and that when the upper part, or neck, of one of them becomes close and impervious, the lower part, or sacculus, constitutes and forms what is properly called the

tunica vaginalis testis ; which is therefore a true and original process of the peritoneum.

3. That of all the parts contained within the scrotum, these sacculi are the only ones which ever naturally communicate with the cavity of the belly.

4. That, after a certain space of time, that communication ceases.

5. That whatever fluid may be shed from the spermatic vessels, or collected, or extravasated, in the cells of the tunica communis, or in those of the dartos; yet no part of such fluid can be derived from, or received into, the cavity of the tunica vaginalis testis.

6. That a total failure of the secretion of that fine fluid, which should moisten the inside of the vaginal tunic, and the outside of the albuginea, must be followed by an unnatural cohesion of these membranes with each other; and either a partial or total abolition of the cavity of the former.

7. That if more of this fluid be deposited than the absorbent vessels can take up, or if the absorbent vessels do not execute their office, such fluid must be accumulated within the cavity of the said tunic; from which there being no natural outlet, the consequence must be a gradual distention and enlargement of it.

8. That the natural communication between the cavity of the tunica vaginalis and the belly, not being shut until some space of time after birth, it may become close at its upper part, while there is a quantity of fluid in the lower,

too large for the absorbent vessels to take up immediately; and consequently, that such infant will, until that office be executed, labour under a true hydrocele of the tunica vaginalis testis; a case, which is very frequent, though generally mistaken for a wind rupture.

And, 9. That the fluid of that kind of hydrocele, which is formed by the sac of a congenial hernia, must be lodged within the cavity of the vaginal coat; while all collections of serum, in the sacs of all other kinds of herniæ, must necessarily be perfectly distinct from the said tunic.

I should now proceed to the examination of each distinct species of hydrocele, but will intrude upon my reader's patience while I mention a circumstance or two, relative to the passage of the testicle from the belly into the scrotum; and which, as a practitioner, he may possibly think worth his attention.

I have said, that the time in or at which the testicles pass from the belly, through the groin, into the scrotum, is by no means certain; that it varies in different people; that even in the same person, the two testes do not always pass down at the same time; that sometimes both of them, sometimes one, remains within the belly, or in the groin, for a considerable space of time after birth; and that it now and then happens, that one or both of them never get into the scrotum at all.

I do not know any particular inconvenience

arising from the detention of a testicle within the cavity of the belly; but the lodgment of it in the groin, not only renders it liable to be hurt by accidental pressure, &c. but when it is so hurt may be the cause of its being mistaken for a different disease, and thereby occasion its being very improperly treated. To which considerations, this may be added, that there is no kind of disease, to which the testicle is liable in its natural situation, but what may also affect it, in any or all its unnatural ones.

CASE I.

I WAS sent to in a great hurry, from the neighbourhood of Limehouse, and desired to bring with me whatever I might want for the operation of a bubonocoele. I found a young, healthy, seafaring man, lying across his bed, and complaining of most acute pain in his groin and back. He told me, that, "In the forenoon of the day before, being at work on board his own vessel, he fell, and struck his groin against a piece of timber with great violence; that it gave him such exquisite pain, that he fainted away; that his groin became immediately swollen to a very considerable degree; that as soon as he could get home, he applied to his apothecary, who bled him, put him to bed, and poulticed the tumor; that he passed the night without sleep, and in great agony; that when his apothecary came to him the next morning, he (the patient)

informed him of a circumstance, which, in his confusion, he had forgot the night before, *viz.* that he had long had a rupture on that side, which had never been perfectly returned; that, upon receipt of this information, the apothecary had bled him again, and had taken some pains to return the rupture: but finding that he made no progress, and that his attempts produced great increase of pain, he had desisted, and had given him two clysters and a purge; neither of which occasioning such discharge as he expected, and a kind of blackness now beginning to appear on the part, he desired immediate assistance."—By the time this account was finished, the apothecary came in, and confirmed it.

The pain was exquisite; and while I was asking the patient a few questions, he became very sick, and vomited. The groin and scrotum were much swelled, and very hard; but the general figure and appearance of the tumor did not appear to me like that of a bubonocoele: instead of pointing obliquely from the ilium toward the pubes, it lay, as it were, across the groin: the scrotum was full and large; but I thought it felt much harder than I had ever found a piece of intestine do; and with regard to the alteration of colour, I cannot say it gave me much uneasiness; for it was not at all like the effect of mortification, but had all the appearance of an extravasation, or ecchymosis. On the other hand, the man had not had a fair stool for three days; he had been very sick, and

had vomited; his belly was tight, hard, and painful; and his pulse much too quick. From examination of the tumor, I could get very little information; for the pain was so exquisite, that he could not bear the slightest touch: however, from what examination I could make, it appeared to me, that if this was an intestinal hernia, it was such an one as I had never yet met with; and nothing but the circumstance of his having worn a truss formerly, by the direction of a surgeon of character, could have induced me to have entertained such suspicion. I inquired again concerning this rupture, and was told, that he had worn a truss for it the first four years of his infancy, but that it never kept the gut totally or perfectly up; and that, as he grew bigger, and ran about, he was obliged to leave it off, on account of the pain it gave him: that since he had left it off, he had not observed any, or very little alteration in the tumor (none in its situation, though a little in its size); and that it had never given him any trouble or uneasiness, if he did not handle it, or kept the waistband of his breeches and his watch from pressing it. All this was far from being satisfactory: and as the present state of the parts was such, as was by no means favourable for an operation, I determined, previous to any other attempt, to try what a brisk cathartic would produce. A stimulating clyster was immediately thrown up, and a solution of an ounce and a half of Glauber's salts in two ounces of inf. senæ swallowed, which, in little

more than an hour, produced so plentiful a discharge, that the belly became soft and easy, and we were perfectly free from all apprehensions of a stricture. Fomentation, poultice, &c. were frequently applied to the tumor, which in three or four days began to subside; and in about seven or eight the scrotum was so unloaded as to permit easy and accurate examination; by which means we were satisfied, that it contained no testicle. Upon mentioning this circumstance to the patient, he said that he never had one on that side. This declaration was a solution of all difficulties, and of all the appearances. When all the effects of the blow were removed, there appeared in the groin, just on this side of the opening in the abdominal tendon, a testicle of natural size and figure; which testicle, by being much bruised, had caused all the mischief.

CASE II.

A POOR man came to St. Bartholomew's hospital, and desired assistance for a swelling in his groin; for which he had, for a month before, been taking Jesuits' drops and other quack medicines, till he had not a farthing left. Upon removing an adhesive plaster, I found a tumor which was large and painful; but at the same time so moveable, as to be very unlike any affection of the inguinal glands. The account which the man gave was, that "He had always had a lump in that groin, and never any

testicle on that side; that when young, he had worn a truss for it, upon a supposition of its being a rupture; that when he came to work for his living, he could no longer bear the uneasiness which the truss gave him, and therefore had left it off for years: that since that time he had never perceived any material alteration in the tumor, nor had it ever given him any trouble, till he had got a clap about two months before; upon the sudden disappearance of which, the lump in his groin became large and painful."

In short, the man had got a hernia humoralis of the testicle in his groin; which, by means of proper treatment, bleeding, cataplasm, and rest, he soon got well of.

C A S E III.

A MIDDLE-AGED man came to St. Bartholomew's, for advice for a tumor in his groin.

He was apparently in good health; the tumor was of an oval or egg-like form, indolent when not pressed, perfectly moveable, lay just in the groin, and had by more than one person been mistaken both for bubo and bubonocoele. When handled or pressed rudely in consequence of the latter opinion, it was painful for some hours after; and the pains (to use his own words) always shot up into his back. It was on the left side; on which side there was no testicle in the scrotum, nor had there ever been one;

but on the right side every thing was as it should be. He said that within two years it had been considerably enlarged; and that it now was become very troublesome to him.

It appeared very plainly to me that the tumor was caused by the left testicle; which testicle was in a diseased state, but very fit for, and very capable of extirpation. I advised the man to submit to the operation, and he had complied; but the late Mr. Griffiths (one of our then assistants) coming into the ward, I desired him to look at the case. Whether he did not attend to all the circumstances, or for what other reason, I know not; but he took it into his head, that it was a tumor of another kind, that might be removed by internal medicine; and dissuaded the man from undergoing what I had proposed: upon which I did not take him into the hospital.

Some months after, the swelling becoming larger and more troublesome, he applied to St. George's hospital. The gentlemen there gave him the same opinion, and the same advice which I had given him; he submitted, and got a cure, by the removal of a testicle which had never been lower than his groin, and which was now become scirrhus.

CASE IV.

THE late Mr. Hollingworth desired me to go with him to see a patient in the neighbourhood

of Clerkenwell. It was a man about fifty-five years old, who had a large ulcerated cancerous tumor in his right groin, with high callous edges: it always discharged a large quantity of a most offensive gleet; at times it bled profusely, and was always extremely painful.

The patient said, that when first it became troublesome, he had showed it to two eminent rupture-curers; one of whom said, that it was a piece of caul, and offered, for twenty guineas, to cure him by cutting it out: the other (more modest, or less hardy,) only sold him two bandages for it; neither of which he could ever wear.

When Mr. Hollingworth carried me to see it, it had just been left by a cancer-curer, who had applied to it an escharotic; and which, by the patient's account, as well as by the appearance of the sore, had made terrible havoc.

During all this time, no one who had seen him (and what is still more remarkable, not even the patient himself) had remarked, that in that side of the scrotum he had no testicle.

The state, both of the man and of the sore, forbade any surgical process; and my advice to him was to dress the sore lightly, and have recourse to tinct. thebaic. for ease: which advice he followed, during the short remainder of his life.

When dead we examined him, and found that the disease consisted in a cancerous testicle lying in the groin; the spermatic vessels of which were varicose, and knotty all the way

up to the kidney, having here and there a bladder of yellow serum in the cellular membrane: the lymphatic glands about the vertebræ of the loins were diseased, as was the liver; and on the surface of the right kidney was a collection of offensive sanies.

S E C T. IV.

THE ANASARCOUS TUMOR OF THE SCROTUM.

THE scrotum is the common receptacle of both the testicles, and consists of the cuticula, cutis, and what all the anatomists have now agreed to call the dartos; which is a loose cellular membrane, perfectly void of fat, and whose cells or cavities communicate with each other, with the utmost freedom, through every part.

As this membrane has no immediate communication with the cavity of the abdomen within the peritoneum, it is plain, that whatever kind or quantity of fluid may be deposited in it, it cannot be derived from the said cavity, even though the patient should labour under a true ascites; but as its cells have a free intercourse with those of the general cellular membrane all over the body, they will be liable to be affected by all those disorders which have their seat in that membrane; that is, by all disorders proceeding from a low impoverished state of blood, from a deficiency of the urinary secretion, or from non-

execution of the office of the absorbent vessels; and consequently, in anasarcous and leucophlegmatic habits, will become the seat of a watery extravasation.

This watery swelling of the scrotum, although it be most frequently a symptom of a dropsical habit, and very often accompanies both the general anasarca, and the particular collection within the abdomen, called the ascites, yet, even in the latter case, neither is, nor can be, derived from the cavity of the belly, but is confined to the tela cellulosa, which lies on the outside of the peritoneum: the water derived from hence distends the scrotum, in the same manner, and for the same reasons, that it often does the legs and feet. The cells of the dartos being larger and absolutely void of fat, and the skin which covers them being extremely dilatable, and giving way for a larger influx into this part than into most others, has indeed occasioned its being taken notice of as a particular disease, though it is most properly a symptom only.

This being the case, and the true method of cure consisting in an internal medical process, it has been, I think, improperly ranked among the species of hydrocele; though the nature of the contents will certainly admit the use of the word.

It is indeed a disease, which properly belongs to the physicians; but as it is of some consequence to be able to distinguish it from other

disorders affecting the same, or the neighbouring parts, and as surgeons are often called upon to assist in alleviating some of the inconveniences which this defluxion produces, it cannot be amiss in this place to give a short account of it, and of the most proper chirurgical method of attempting its relief.

It is an equal, soft tumor, possessing every part of the cellular membrane, in which both the testicles are enveloped, and consequently is generally as large on one side as on the other; it leaves the skin of its natural colour; or, to speak more properly, it does not redden or inflame it. If the quantity of water be not large, nor the distension great, the skin preserves some degree of rugosity; the tumor has a doughy kind of feel; easily receives, and for a while retains, the impression of the fingers; the raphe or seam of the scrotum divides the swelling nearly equally; the spermatic process is perfectly free, and of its natural size; and the testicles seem to be in the middle of the loaded membrane. This is the appearance when the disease is in a moderate degree. But if the quantity of extravasated serum be large, or the disease farther advanced, the skin, instead of being wrinkled, is smooth, tense, and plainly shows the limpid state of the fluid underneath: it is cold to the touch, does not so long retain the impression of the finger, and is always accompanied with a similar distention of the skin of the penis; the preputium of which is sometimes so enlarged,

and so twisted, and distorted, as to make a very disagreeable appearance. These are the local symptoms: to which it may be added, that a yellow countenance, a loss of appetite, a deficiency of urinary secretion, swelled legs, a hard belly, and mucous stools, are its very frequent companions.

The cure of the original disease comes, as I have already said, within the province of the physician, and requires a course of internal medicine: but sometimes the loaded scrotum and penis are so troublesome to the patient, and in such danger of mortification, that a reduction of their size becomes absolutely necessary; and at other times a derivation, or discharge, of the redundant extravasated serum from this part is ordered as an assistant to the internal regimen.

The chirurgical means in use for this end is called in general scarification; a term, whose precise sense has by no means been settled; by which it has now and then happened, that a general order being given, and the particular method of executing it being left to the choice of those who have not been sufficiently acquainted with this kind of business, much hazard has been incurred, and considerable mischief done, which might have been avoided.

The means of making this discharge are two, *viz.* puncture and incision: the former is made with the point of a lancet; the latter with the same instrument, or with a knife.

The generality of writers on this subject have

spoken on the two methods in such a manner, that a practitioner, who had seen but little of either, would be inclined to think that it was a matter of great indifference which we should make use of, and that the safety and utility of each were equal, which is by no means the case.

The intention of the use of either is, by a discharge of extravasated serum, to alleviate the present uneasiness; and, by reducing the size of the scrotum, to render it less troublesome, and less likely to mortify. In some few instances it has indeed happened, that this drain has proved a radical cure of the original disease; but that has been accidental, and is not in general to be expected. The intention is generally palliative; and, if the patient lives, is most likely to require repetition: therefore, if there be any difference between the two methods, with regard either to ease or safety, there can be no doubt which ought to be preferred.

All wounds of membranous parts, in anasarous or dropsical habits, are necessarily both painful and hazardous: they are apt to inflame, are very difficultly brought to suppuration, and will often prove gangrenous in spite of all endeavours to the contrary. But the larger and deeper the wounds are, the more probable are these bad consequences. Simple punctures with the point of a lancet, are much less liable to be attended by them, than any other kind of wound; they generally leave the skin easy, soft, cool, uninflamed, and in a state to admit a repe-

tition of the same operation, if necessary. Incisions create a painful, crude, hazardous sore, requiring constant care. Punctures seldom produce any uneasiness at all; and stand in need of only a superficial pledget, for dressing.

Now, although there is so very material a difference in the symptoms and trouble attending the two methods, yet there is none in their effect: the communication of the cells of the dartos with each other is so free, through every part of it, that punctures made with the fine point of a bleeding lancet, into the most superficial of them, will, as certainly and as freely, drain off all the water, as a large incision, without any of its inconveniences or its hazard. Neither the one nor the other will cure the original disease, unless by mere accident: they are both made, with a design to cure only the local one. The same habit and constitution remaining, the same effect will in general follow, and the same relief be again necessary. The ease, the freedom from bad symptoms, or from danger, and the state in which the parts are left, render one method practicable at all times, and capable of being repeated as often as may be thought necessary: the fatigue, pain, confinement, and hazard, which most frequently attend the other, make one experiment in general as much as most people choose to submit to, or indeed an opportunity of complying with.

CASE V.

A MAN about fifty-five years old, who had lived freely, was afflicted with an anasarcaous tumor of the belly, legs, thighs, scrotum, and penis, accompanied with the general symptoms which most frequently attend such complaints, *viz.* prostration of appetite; little urine, and that high-coloured; a hard belly; and a bloated face.

He had taken many medicines by the direction of a physician in the country, and more than one quack-remedy since he had been in London, but to no purpose: the watery load increased daily, and the swelling of the penis and scrotum became so troublesome, as to prevent his wearing breeches.

In these circumstances, a person who attended him in the capacities of apothecary and surgeon, proposed to draw off the water by an incision on each side of the scrotum; to which the patient consented. The incisions were made, and in a few hours the scrotum was empty and flaccid.

At the distance of five days from this operation, his surgeon died, and I was desired to visit him.

I found him in bed, with a painful, foul, undigested sore, on each side of the scrotum; which, though it had at first been emptied by the incision, was now again considerably loaded with serum, but at the same time hard and inflamed: the edges of the wounds were livid, the discharge from them was a discoloured gleet; and the pain was so great, that the man could

get no rest; his pulse was frequent, hard, and small; his breathing not perfectly free; his urine little, and high-coloured; his thirst very troublesome; his belly hard and tight; and having taken an opiate every night from the time of the operation, he had not had a stool for three days past.

I dressed the incisions with a soft digestive; and covering the whole scrotum with a warm poultice, tied it up in a bag truss; directed a clyster to be thrown up immediately, and a purge to be taken the next morning: from which in the following day he had four or five stools, and by which his respiration was relieved, and his belly rendered softer.

Next day the inflammatory hardness of the scrotum seemed to be going off, but to be succeeded by an emphysematous kind of tumefaction; and in four days from that of my first visit to him, the whole bag was in a state of mortification, notwithstanding the constant use of fomentation, cataplasm, &c,

Having already taken a large quantity of medicine of different kinds, it was with much difficulty that I could prevail on him to hear of any more: but upon making a true representation to him of the state of his case, and of his imminent hazard, he consented to take the bark, with some confect. cardiac. and tinct. rad. serpent. every three or four hours.

By putting a tea-spoonful of brandy into each dose, it kept upon his stomach. At the end of three days, the pain and soreness were conside-

rably lessened ; and on the sixth he got a little quiet sleep without any opiate : on the ninth the mortified parts seemed inclined to suppurate, and the gleet was small, in comparison of what it had been ; on the twelfth there was an appearance of tolerable good matter from the edges ; on the fifteenth a laudable suppuration was established, and the mortified parts were every where loose and falling off. Instead of a small quantity of high-coloured urine, he now made what was nearly equal to his drink, and that very well-conditioned ; and the watery extravasation in his legs and thighs was considerably diminished.

He now began to nauseate the bark, in the form in which he had hitherto taken it : it was therefore changed for another, which he took at larger intervals ; and, to assist his urinary discharge, his apothecary gave him an infusion of the cineres genistæ and horseradish, which answered the purpose very well.

The whole scrotum and dartos cast off in a large slough, and left the tunica vaginalis of both testicles as bare and clean as if they had been dissected : these were soon covered by an incarnation, which supplied the place of the scrotum tolerably well ; and by persisting in the use of the same remedies for a few weeks longer, he was restored to perfect health.

CASE VI.

A MAN, not exceeding forty, who had drank

freely of spirituous liquors, was thereby brought into the same circumstances as the patient in the preceding case ; that is, his countenance was yellow and bloated ; his legs, thighs, scrotum, and penis, loaded with a watery tumor ; he had little or no appetite ; and made a very small quantity of high-coloured urine.

Internal remedies having been ineffectually tried for some time, he was advised to have an incision made on each side of the scrotum ; by means of which, all the swelling, both of it and of the penis, was immediately removed, and the patient much pleased.

On the fourth day from the operation all discharge of serum ceased, and the wounded part swelled, inflamed, and became very painful. Fomentation, cataplasm, and proper digestive dressings were used, but without any relief from the pain, or any beneficial alteration in the appearance of the sores. On the sixth day from that of the incision, I was desired to meet the gentleman that had the care of him. I found that the hard inflammatory swelling, which a day or two before had occupied the whole scrotum, was now gone off, and that it was become flabby and livid, especially about the incisions.

I proposed his taking the cortex, but it was not complied with ; nor do I know what the medicines were which he did take, neither myself nor his attendant surgeon being consulted on that head. Warm spirituous fomentations, with proper poultice and dressings, were continued, but to no purpose. I saw the patient each

morning for four days; during which, he got little or no rest, and complained of great pain and burning heat within his belly; the watery extravasation in his thighs and legs increased daily; the whole scrotum and skin of the penis became black, and mortified, as did also the part of the pubes; and on the eleventh day from that on which the incision was made, he died.

CASE VII.

A MAN, about forty-five years old, by name Corby, who was a patient in St. Bartholomew's hospital on another account, showed me a swelling on the left-side of his scrotum. It was large, full, tight, and had all the symptoms and appearances of an hydrocele of the tunica vaginalis; viz. the fluctuation of the fluid, the freedom of the upper part of the process, and the concealment of the testicle. I thought myself so clear in the true nature of the disease, that, without any scruple, I pierced it with a small trochar in the lower and anterior part, and thereby let out about two ounces of limpid water; but could by no means draw off any more, though I pressed a probe up through the cannula, and used every other means proper to obtain it.

I withdrew the cannula, and examined the swelling again; which was but little diminished by what had been done: but though it was not much decreased in size, it was considerably altered in appearance. I could now very plainly

distinguish the testicle, and was convinced, that the whole disease was confined to the cells of the dartos. In short, it was (what I had never seen before) an anasarca of that membrane, on one side only; having a certain quantity of the water in one cyst or bag, and the rest diffused through the cells in the usual manner: the latter made all the tumefaction which remained after tapping; and the former had concealed the testicle.

Being now truly satisfied of the nature of the case, I made an incision, about an inch long, through the scrotum into the loaded dartos; intending thereby to drain off the water, and, by procuring a suppuration, to cure the disease. Into the incision I put a little dry lint, and tied the scrotum up in a bag-truss.

To my great astonishment, the next day my dresser told me, that Corby's scrotum was swelled to a great size, and that the incision was already livid. I went to the hospital, and found it so: I ordered the part to be fomented, and wrapped up in a warm poultice; and that the man should take the cortex freely, till the physician should see him.

In three days time, the whole scrotum and the skin of the penis was completely mortified; and a considerable part of the pubes altered and vesicated: his pulse was quick and small; he complained of a burning heat in his belly and bladder; his thirst was intense; and his extremities cold.

For several days I was convinced that each

would be his last ; his fomentation, cataplasmi, and dressings, were continued. The doctor ordered him a dram of the bark, as often as his stomach would bear or keep it, in a julep, well impregnated with volatile salt ; and the poor man earnestly begged to be allowed a pint of porter a day ; which he had. At last, in about three weeks time, the whole scrotum, the integuments of the penis, and some part of the pubes cast off, leaving the corpora cavernosa and the tunica vaginalis as clean as if they had been dissected. The man got well.

More of the same kind of cases might be produced, in which the trouble and hazard attending large incisions of the scrotum, in dropsical cases, have been great ; but the similarity of them renders it unnecessary. I shall therefore only add, that from the simple puncture I have seldom met with either ; and that I have as seldom known them fail to answer the purpose for which they were intended, *viz.* a temporary discharge of serum from the cellular membrane.

SECT V.

If we consider the preceding complaint as merely symptomatic, and do not rank it among the different kinds of hydrocele, there will then remain only three ; *viz.*

1. That which consists of a collection of water in the cells of the tunica communis, or cellular

membrane, enveloping and connecting the spermatic vessels.

2. That which is formed by the extravasation of a fluid, in the same coat as the former, but which, instead of being diffused through the general cellular structure of it, is confined to one cavity or cyst, in which all the water constituting this species of disease is contained; the rest of the membrane being in its natural state.

3. That which is produced by the accumulation of a quantity of water, in the cavity of the tunica vaginalis testis.

These three are distinct, local, and truly within the province of surgery. They may accidentally be combined or connected with other disorders, but not necessarily; and are frequently found in persons whose general habit is good, and who are perfectly free from all other complaints.

THE HYDROCELE OF THE CELLS OF THE TUNICA COMMUNIS.

IN the anatomical account of the parts, which make the seats of the different kinds of hydrocele, it has been observed that the spermatic vessels, from their origin quite down to the insertion into the testicle, are enveloped in, and connected together by, a membrane, called formerly *tunica vaginalis vasorum spermaticorum*, but now (more properly) *tunica communis*. That this membrane so enveloping the spermatic vessels

has no one particular cavity (as its old name would seem to imply); but is merely cellular, as either the inflation of air, or the extravasation of a fluid, will always prove. That while it is within the cavity of the belly, its cells are lax and large; and when it has passed out from thence, and has formed a part of the spermatic process, by enveloping its vessels, its cells are rather smaller, and the membrane composing them firmer. That it is included within that thin expansion of muscular fibres, called the cremaster. And that a great number of lymphatics, passing from the testicle to the receptaculum chyli, are always to be found in it.

An attentive consideration of these circumstances in the structure of this part will show us, why either obstruction or breach in the lymphatic vessels, considerable pressure by means of diseased indurations within the abdomen, or a morbid state of the parts which should receive the lymph from the vessels of the spermatic chord, may induce the disease in question; and also, when it is produced, that its appearance, and nature of the extravasation, must make the term *cellular* a very proper one, as expressive of its true state^k.

^k “ J’ai souvent vû des tumeurs aqueuses, grosses comme des grains de rasin, placées d’espace en espace le long du cordon spermatique, accompagner une veritable hydrocele placée sur le corps du testicle.”

LE DRAN.

The first part of this paragraph is a just and true description of the hydrocele of the cells of the tunica communis, when not

When the disease is simple, it is perfectly local; that is, it is confined entirely to the membrane forming the tunica communis; and does not at all affect, either the dartos, the tunica vaginalis testis, or any other part.

It is a complaint which does not give a great deal of trouble unless it arrives to a considerable size; and being by no means so frequent as either of the other two kinds of hydrocele, it is in general but little known or attended to. With some, it passes for a varix of the spermatic chord; with others, for the descent of a portion of omentum, which having contracted an adhesion cannot be returned. Thus its true nature not being in general rightly understood, and it giving but little trouble or uneasiness while it is within moderate bounds, and neither hindering any necessary action or faculty, they who have it are most frequently advised to be contented with a suspensory bandage, and find very little inconvenience from it.

Sometimes it arises to so large a size, and gets into such a state, as to become an object of surgery, and to require our very serious attention.

In general, while it is of moderate size, the state of it is as follows. The scrotal bag is free from all appearance of disease; except that when the skin is not corrugated, it seems rather

much distended: but if by "*une véritable hydrocele*," Mr. Le Dran means that of the tunica vaginalis, his description of it, as "*une tumeur aqueuse, placée sur le corps du testicule*," is very inexpressive, inadequate, and likely to convey an erroneous idea.

fuller, and hangs rather lower on that side than on the other, and if suspended lightly on the palm of the hand, feels heavier: the testicle, with its epididymis, is to be felt perfectly distinct below this fulness, neither enlarged nor in any manner altered from its natural state: the spermatic process is considerably larger than it ought to be, and feels like a varix, or like an omental hernia, according to the different size of the tumor: it has a pyramidal kind of form, broader at the bottom than at the top: by gentle and continued pressure it seems gradually to recede or go up, but drops down again immediately upon removing the pressure; and that as freely in a supine as in an erect posture: it is attended with a very small degree of pain or uneasiness; which uneasiness is not felt in the scrotum, where the tumefaction is, but in the loins.

If the extravasation be confined to what is called the spermatic process, the opening in the tendon of the abdominal muscle is not at all dilated, and the process passing through it may be very distinctly felt; but if the cellular membrane which invests the spermatic vessels within the abdomen be affected, the tendinous aperture is enlarged; and the increased size of the distended membrane passing through it, produces to the touch a sensation not very unlike that of an omental rupture.

While it is small it is hardly an object of surgery; the pain or inconvenience which it produces being so little, that few people would

choose to submit to an operation to get rid of it; and it is very seldom radically curable without one: but when it is large, or affects the membrane within the cavity as well as without, it becomes an apparent deformity, is very inconvenient both from its size and weight, and the only method of cure which it admits is far from being void of hazard; as must appear to every one who will consider, or who is at all acquainted either with the nature of lymphatic extravasation or absorption, or with the frequent consequences of wounds inflicted on parts merely membranous.

CASE VIII.

A MAN about fifty-five desired me to look at a rupture, under which he said he had laboured for several years. For the greatest part of that time he had worn a steel truss, which had given him little or no uneasiness, but had never kept his rupture up. During all this time he never had any symptoms of obstruction in the intestinal canal; nor had the tumor ever increased in size, or altered its appearance, until within the last three or four months, when he had been persuaded to change his truss for a bandage without iron, and to make use of an external application, which was said to be infallible.

What the application was I know not; but its effect was an excoriation of the groin and parts about: the bandage was made of dimity, had a large hard bolster, with three or four buckles, and was buckled on very tight.

He said, that the pain it had caused had

been great; but that he had cheerfully submitted to it, having been assured that the medicines, assisted by the pressure, would soon shrink up a piece of caul which was in the scrotum, and thereby free him from all possibility of a return of his disease; and that, after that was done, he might leave off all kind of bandage, and do as he pleased.

He had now made the experiment, till the pain was so great, and the parts so swelled, that he could endure it no longer. The scrotum was much inflamed, and swelled; the groin excoriated; the testicle enlarged, but not hard; the spermatic process quite up to the belly, full, tight, and so exquisitely painful, that he could not bear the most gentle handling; he had no obstruction on his going to stool; nor any symptom of the confinement of any part of the intestinal canal. The principal information which I could get was from his own account; for he could not bear the slightest touch. From this it appeared to me, that whatever might be the true state of the case, it was very clear, that the first thing to be done was to obtain ease. I therefore put him to bed, bled him freely, ordered him to have a clyster thrown up immediately, and to take two spoonfuls of a purging mixture every two or three hours, until he should have a free discharge per anum; and then to take a grain of extract. thebaic. I wrapped up the scrotum, and covered the groin and pubes with a warm soft poultice, and put on a bag truss.

He passed the day in a very uneasy restless state; and in the evening, finding his pulse not at all lower, nor his pain less (his purging mixture having done its duty), I took away fourteen ounces more of blood, and ordered his opiate to be taken again, and repeated at the distance of every six hours. Forty-eight hours passed over, during which time he took seven grains of opium, before he could get sleep or ease; and when he obtained the former, it did not last more than three or four hours (an effect I have several times seen, in the exhibition of large and frequently-repeated doses of opium, given either to appease pain, or to quiet a phrenzy.)

When he awoke, he was easier, and seemed to be much refreshed; his pulse was softer, his perspiration free, and the parts less inflamed, and less painful; his poultice was renewed after fomentation; and he was directed to take a draught of the common emulsion every six hours, with some manna and nitre in it; by which means he had, in the course of the next day, two plentiful discharges by stool.

By these means, within the space of six or seven days, all his inflammatory symptoms were removed; and the parts reduced to nearly the same state in which they were when he put on his dimity bandage: that is, the testicle was of its natural size, but the spermatic process large and full, though soft and indolent, and feeling very like to a small omental rupture.

For greater certainty, I kept him in bed a

day or two more; and confined him to the same low regimen, with an open body.

The spermatic process continued in the same state. I attempted to reduce the apparent rupture, but without success; though there was no reason to think that there was the least stricture made on it by the tendon of the abdominal muscle. I could indeed make a small part of it recede, but even that did not pass the opening at all like a piece of omentum; it did not give any of that sensation to my fingers, nor produce that kind of noise, which the return of a rupture into the abdomen generally does; and the moment I removed my fingers, it fell down again, although the patient was in a supine posture. In short, I made attempts for reduction so long, and so often, that I was perfectly satisfied that the prolapsed part was not reducible (at least by me).

It now gave him no pain, nor uneasiness of any kind: but he had suffered so much from the pressure of his bandage, and was so satisfied (from the unsuccessful attempts which I had made) that his rupture was not capable of being reduced, that he contented himself with a common suspensory bag, and found not the least alteration in it for the space of three years. At the end of this time he was attacked with a peripneumony, and died.

I obtained leave to examine his body, and found, that what I had taken for a portion of omentum was a collection of water in the cells of the tunica communis of the spermatic vessels,

on the outside of the cavity of the abdomen; that nothing else had passed through the tendon of the oblique muscle; and that the testicle, and tunica vaginalis, were perfectly unaffected.

Notwithstanding the account which this patient had given of himself, and of his having frequently reduced his rupture, I am satisfied that he never had one; and that his disease had, from the first, been what it at last appeared to be. There was no sign of a hernial sac; and though the return of such sac back again into the belly, after it has been in the groin or scrotum, is a thing much talked of by late writers, I do not believe that it ever happened.

The steel truss did not press hard enough to produce any mischief, and was thought not to have kept his rupture up; and the symptoms, under which I found him labouring, were occasioned merely by the dimity bandage, substituted in the place of his truss; which having large hard bolsters, and being buckled on very tight, pressed violently on the spermatic vessels and loaded membrane.

CASE IX.

A HEALTHY middle-aged man applied to me one day, while I was dressing the hospital, and showed me a considerable swelling in his scrotum. I examined it, and told him I believed it to consist of water. He replied, he knew it; for that Mr. Baker, then one of the surgeons of the Westminster infirmary, had a few days

before drawn some from it by puncture with a lancet. Upon hearing this, I examined it again, imagining that I might possibly find it to be blood (a circumstance which now and then happens, after tapping a common hydrocele): but still it appeared to me to have all the marks of a tumor from water, and to be principally in the spermatic chord. The dartos was indeed a little thickened by the insinuation of a small quantity of a fluid into some of its cells, but the testicle was much too plainly distinguishable, for the case to be taken for a hydrocele of the tunica vaginalis; nor was the upper part of the process in that free state in which it is most frequently found in that disease. I took him into the hospital, and ordered him to keep his bed, till I saw him the next day; at which time I passed a small trochar into the anterior part of the tumor a little higher than usual. At first a limpid serum flowed freely; but that soon stopped, and I was necessitated to pass a probe frequently up the cannula, to get away the remainder; neither could I, either by that means, or by pressure, reduce the scrotum to a proper size, or remove the fulness of the process above. I ordered the part to be fomented night and morning, and the whole scrotum and groin to be covered with a soft poultice; and that the man should take a solution of manna and Glauber's salt the next morning. The applications were continued, and the purge repeated every second or third day, for a fortnight; at the end of which time, the swelling was as large as when I first saw it.

During this interval of time, I frequently examined the parts; and always found the testicle much more free, and independent, than I had ever felt it in a hydrocele of the tunica vaginalis. It appeared to me, from the kind of fluid which had already been twice left out, and from the present appearance of the part, that no cure would be obtained without laying the whole open; but as I was by no means certain, what was the precise nature of the disease, or in what state the parts might be found, I informed the man that it might possibly become necessary to remove that testicle. To this he consented; and I made an incision, through the skin, from the groin down as low as the testicle; intending, if I had found the process diseased, to have castrated.

The incision was followed by a large discharge of water, not only from the lower part, where there seemed to have been a considerable collection in one cavity, but from the surface of the whole cellular membrane enclosing the spermatic vessels. Finding this membrane no other way diseased than by the watery distention of its cells, I went no farther with my operation, but filled the incision lightly with soft lint. For three or four days the discharge of serum was large; but that ceasing, a plentiful suppuration succeeded; which was followed by a perfect subsidence of the whole tumor; and in due time the wound healed, and the man obtained a cure.

CASE X.

A GENTLEMAN about thirty-five years of age, came out of the North, to London, for the assistance of Mr. William Sharpe, in the case of a large tumor of the scrotum; which, he said, had been coming five or six years.

The account which he gave of it was, that at first it was small, easily (as he thought) put up, but came down again immediately; which he attributed to his not having been accommodated with a proper bandage; that at the end of about nine months, or rather more, he found that he could not reduce it at all, whatever pains he took, or whatever posture he put himself into; and that, from this time, its increase had been daily more apparent. The case was singular; and Mr. Sharpe desired me to see it with him.

The scrotum was of a most prodigious size; it hung more than half way down to the patient's knee; it was very ill supported, by an awkward bag of his own making; and, toward the lower part, was much ulcerated, by neglected excoriations. Different parts of the tumor felt very differently; in some places, it was hard; in some, soft; and in others, a thin fluid was palpably discoverable. The spermatic process was large and full, quite up to the groin; the aperture in the abdominal muscle was considerably dilated by it; and when the patient coughed, the whole tumor was manifestly distended: his stools were regular, his appetite good, his urine

proper in quality, but very deficient in quantity; his sole complaints were, a pain in his back (proceeding as we supposed from the weight of the scrotum), and a languor and dispiritedness, which he had not been accustomed to, and could not account for.

The feel of some part of the tumor was like that of an intestinal hernia, in which there is no stricture, and the gut does its office in scroto; but other parts of it were so unlike to this, and the upper part of it toward the groin was so large, and so hard, that we remained in great doubt concerning the true nature of the contents.

When we had sufficiently examined the tumor in an erect posture, we put the patient into a supine one, which produced a considerable alteration in the appearances; the tumor became manifestly less, and softer; and seemed, by retiring, to occasion a large swelling on that side of the belly, just above the os ilion, tending backward toward the region of the kidney. Upon continued pressure, the contents of the scrotum seemed to recede still more; and still as they receded, the swelling on the side of the belly increased. When we had got up to a certain point, we could get up no more; but during our endeavours to return as much as we could, we clearly discovered that the tumor in the scrotum, and that within the belly, were produced by the same body; that there was a palpable and free fluctuation, from the one to the other; and that the harder parts were mere

indurations, and thickenings of the integument and common membrane.

The burden was so great, that the patient was desirous of being eased, at any rate. We communicated to him our opinions, our suspicions, fears, and uncertainty; and told him what hazard might possibly be incurred, by acting according to the former, if we should be mistaken; but he being determined to endeavour to obtain relief, at all events, and we being prepared, as well as we could, for whatever might happen, made a small incision into the lower, and anterior part of the tumid scrotum.

As soon as we had divided the skin, a quantity of clear limpid water burst forth, of which we caught above a quart; and then the opening was stopped, by something which thrust itself out, and looked like a piece of cellular membrane loaded with water. We cut a part of it off, and gently pushed back the rest with a probe; while by moderate and continued pressure, we drained off eleven Winchester pints of water.

When we could get no more away, we would have enlarged the opening; but our patient found himself so lightened, and so easy, that he would not permit it.

The scrotum, it is true, was considerably lessened; but in no proportion to the quantity of water which had been drawn off: the whole spermatic process, from the testicle quite up to the belly, was still large and full; and the abdominal opening still dilated by a large body passing through it; but, as the swelling in the belly

could not now be felt in any posture, and as the scrotum was reduced to such a size as to be easily supportable by a bag truss, he determined to wait the effect of what had already been done. In little more than a month we saw him again. The tumor in the side of the belly was as apparent, the fluctuation as palpable, and the burden as great, as when we first saw him. His health was still good in general; but his face appeared to me to be more pale and wan, and he complained still more of thirst and languor.

As we were now sure of the nature of the contents, we divided the whole scrotum from the bottom upward. The lower part was formed into a cyst, or bag, made by the pressure of the water, which was discharged upon the first introduction of the knife; but all the rest of the tumor was formed by the diffusion of serum through all the structure of the tunica communis, the cells of which were all much enlarged with it, quite up to the groin; the testicle being very distinct, and free from disease. The serum oozed freely from all parts of this membrane by gentle pressure; and as it seemed to subside considerably thereby, we meddled no farther, but contented ourselves with filling the incision lightly with dry lint, and suspending the scrotum in a bag truss.

During the first two or three days, the discharge of water was constant and plentiful; and the sore was (as might be expected) crude and undigested; but without any of that inflammatory hardness and swelling, which wounds, made

in such parts, in healthy sanguine people, generally have; on the contrary, the lips were flaccid, and soft: it is true, he was perfectly free from fever or pain, and, except the circumstances just mentioned of thirst and languor, he had no apparent disorder; but they were great and troublesome. The discharge of water continued large, and his wound neither digested nor inflamed; nor did it wear any the least appearance of gangrene, or mortification: his languor and anxiety increased daily; and on the fourteenth day from that of the operation, he died; the sore still wearing the same face.

Upon opening his body, we found all the cellular membrane which invested the spermatic vessels within the abdomen loaded with water, and distended in a very irregular manner, from the origin of the said vessels quite down to the opening of the oblique muscle. At this place it was contracted into a round, or rather a flattish body, of less size, but still so large, as to dilate the opening in the tendon considerably. Below this it was again expanded and distended with water, through all its cells; but the testicle, and its tunica vaginalis, were in a sound state, and perfectly unaffected by the disease.

Was it the large discharge of serum, or the free division of membranous parts which occasioned this gentleman's death? For my own part, I am inclined to attribute it to the former; for though an incision, made in parts of such structure, and so diseased, does sometimes prove fatal, yet the parts themselves in such case

generally show, by a gangrenous or mortified appearance, what share such operation has in the patient's destruction.

In this case, there was indeed no digestion, nor any of that inflammation, which always precedes suppuration; nor, on the other hand, was there any appearance like gangrene or sphacelus; but his manner of dying was very much like that of those who are destroyed by large hæmorrhages.

SECT. VI.

THE ENCYSTED HYDROCELE OF THE TUNICA COMMUNIS.

THIS species of hydrocele has its seat in the same part as the preceding; *viz.* the tunica communis, or cellular membrane, which invests the spermatic vessels; with this difference, that, in the former, the water is diffused in general through all the cells of the membrane; whereas in this, it is contained in one cavity only. If any of the three kinds of hydrocele deserves the name of encysted, it is this. The water which constitutes it being all contained in a bag, formed in the same manner as all the coats of all encysted tumors are; *viz.* by mere pressure, and condensation of the common membrane.

It is a complaint by no means infrequent,

especially in children. It was very well known to many of the ancients, and has been very accurately described by some of them¹; but later writers have often mistaken it for, and

¹ By Albucasis, by Celsus, Paulus Ægineta, and others. The last has particularly distinguished this kind of hydrocele from that of the tunica vaginalis, by a very just description of both: “ Si humor in membrana supernata coierit, tumor alterius testiculi imaginem exhibet. Quibus in Erythroide tunica humor comprehensus est tumor rotundus paululum, et ovi modo longiusculus: his testiculus in conspectum non venit, ut qui undiquaque sit implicitus.”

The former of these descriptions, our countryman Peter Lowe has most probably copied, when he says, “ It is sometimes inclosed in a membrane, and appeareth like a third testicle.”

Heister speaks of this species of hydrocele as very rare, only quotes the authority of others to prove its existence, and seems in some measure to confound it with a collection of fluid in a congenial hernial sac.

Page 842, he says, “ Quandoque tamen etiam, ut nonnulli autores referunt, in peritonæi processu, supra testiculum, liquor præter naturam colligitur: imo etiam in productione peritonæi, ab intestinorum hernia orta, copiosum liquorem in cadavere, sectione aliquando deprehendi.” And in a note on this passage he adds, “ Wiedemannus, nec non Boerhavius, itemque Garengeotus et Dranius memorant istiusmodi hydroceles casus quandoque observari; ubi digito contingi testiculus queat; atque tunc supra testiculum in peritonæi processu tumorem et humorem consistere. In enterocele autem contrarium quandoque usu venire, propterea quod intestina interdum, ut supra monui, usque in tunicam vaginalem, per septum illud naturale, quod testiculum a parte superiori processus peritonæi distinguit penetraverunt.”

“ Sed rari admodum sint necesse est, ad quos modo laudati autores provocant casus. Ego sane quanquam plurimos homines enterocele, non minus quam hydrocele laborantes sanaverim, nunquam tamen adhuc ita rem inveni,” &c.

represented it as, a species of wind-rupture, or pneumatocele; a disease existing in their imaginations only. It most frequently possesses the middle part of the process, between the testicle and groin, and is generally of an oblong figure; whence it has by some people been compared to an egg, by others to a fish's bladder. Whether it be large or small, it is generally pretty tense, and consequently the fluctuation of the water within it not always immediately or easily perceptible; for which reason it has been supposed to contain air only. It gives no pain, nor (unless it be very large indeed) does it hinder any necessary action. It is perfectly circumscribed; and has no communication, either with the cavity of the belly above, or that of the vaginal coat of the testicle below it. The testis and its epididymis, are perfectly and distinctly to be felt below the tumor, and are absolutely independent of it. The upper part of the spermatic process in the groin is most frequently very distinguishable. The swelling does not retain the impression of the fingers; and when lightly struck upon, sounds as if it contained wind only. It undergoes no alteration from change of the patient's posture; nor is affected by his coughing, sneezing, &c.; and has no effect on the discharge per anum.

These marks (while the disease is simple and uncombined with any other) are sufficient to distinguish it by, from all others which may affect the same part: but it sometimes happens, that the present complaint is found connected

either with a true hernia, or with a hydrocele of the tunica vaginalis; by which the case is rendered complex, and less easy to be understood.

In this, as in every other case where, from a complication of symptoms and appearances, a combination of diseases may be suspected, there is but one method of investigating the truth; which is, to consider carefully what disorders the part aggrieved is naturally liable to; what the distinct symptoms and appearances of each of those are; and what are the effects of the present complaint. The two diseases with which this kind of hydrocele is most likely to be combined, are, as I said before, an hydrocele of the tunica vaginalis testis, and a true hernia; the parts within the groin, the spermatic process, and the scrotum, being the seat of all three.

One mark, or characteristic of an hydrocele of the tunica vaginalis testis is, that it possesses and distends the inferior part of the scrotum; and that the testicle being nearly (though not absolutely), surrounded by the water, it very seldom happens that the former can be clearly and plainly distinguished by the fingers of an examiner; whereas, in the encysted collection, in the membranes of the chord, the tumor is always above the testicle, which is obvious and plain to be felt below it.

Another circumstance worth attending to is, that although the fluid in a hydrocele of the vaginal coat does so nearly surround the testis as to render it often not very easy to be distin-

guished, yet the different parts of the tumor have always a very different feel: for instance, in all those points where the vaginal tunic is loose, and unconnected with the tunica albuginea, the tumor is soft and compressible, and gives a clear idea of the contained fluid; but when these two coats are continuous, or make one and the same membrane, and have no cavity between them (which is the case on the middle and posterior part), there will always be found a hardness and firmness, very unlike to what is to be found in all those places, where the distance^m between the two tunics leaves room for the collection of a fluid: now the hydrocele of the chord being formed in the mere cellular membrane of it, is the same to the touch in all the parts of the tumor, and feels like a distended bladder through every point of it.

The free state of the upper part of the spermatic process, while the tumor is forming below; the gradual accumulation of the fluid, and consequently the gradual growth of the swelling; the indolent and unaltering state of it; its being incapable of reduction, or return into the belly from the first; its being always unaffected by the patient's coughing or sneezing; and the uninterrupted freedom of the fæcal discharge per anum, will always distinguish it from

" " Tunica Erythroides naturæ nervosæ, in gibba quidem
 " et anteriore e testiculo libera est, in concava et posteriori ipsi
 " adherescit ex peritonæo originem trahens."

PAULUS ÆGINETA.

an intestinal hernia: and he who mistakes it for an omental one, must be very ignorant, or very heedless.

Now, although there may not always be such external marks as may, to the eye, explain the combination of these diseases with each other; yet the particular seat and symptom of each being known, and the sensations which they produce to the fingers of an intelligent examiner being well understood, when such mixed characteristics are found in the same subject, we may reasonably conclude the case to be complex, and act accordingly.

I have indeed seen an encysted hydrocele, situated so high toward the groin, as to render the perception of the spermatic vessels very obscure, or even impracticable; but then, the state and appearance of the testicle, and the absence of every symptom proceeding from confinement of the intestinal canal, were sufficient marks of the true nature of the complaint.

Infants are much more subject to this disease than adults; though it often affects the latter.

In young children, it frequently dissipates in a short time, especially if assisted by warm fomentation and an open belly.

If it does not disperse, that is, if it be not absorbed, the point of a lancet will give discharge to the water; and, in young children, will most frequently produce a cure: but in adults, the cyst formed by the pressure of the fluid does sometimes become so thick, as to require division

through its whole length; which operation may in general be performed with great ease and perfect safety: I say in general, because it is most frequently so; though I have seen even this, slight as it may seem, prove troublesome, hazardous, and fatal. Of such consequence are wounds in membranous parts in some particular habits.

CASE XI.

A LAD about sixteen years old was taken into St. Bartholomew's hospital, with a complaint which he had been told was a rupture.

The tumor was large, of an oblong figure, began just below the exit of the spermatic vessels from the belly, and extended to the bottom of the scrotum; but in the middle of it was a depression, or stricture, which seemed to divide it nearly into two equal parts. The upper part was so high, that I could not feel the spermatic process at all satisfactorily; and although there was palpably a fluid in the whole of the swelling, yet the upper and lower parts of it did not seem to communicate with each other; at least the fluctuation through them was not discernible. As he had never had any symptom of a true hernia, and as the account he gave of the gradual formation of the tumor joined to the fluctuation, &c. convinced me that it was principally if not totally water, I pierced the lower part carefully, and drew off nearly half a pint of yellowish serum; by which means the

scrotum became immediately empty and rugous, and the testicle clearly distinguishable; but the upper part of the swelling remained as large and as tense as before, nor could I by any means obtain a drop of fluid more from below.

The next day I ordered him a brisk purge, which operated well; and two or three days after, being satisfied that the intestinal canal could have no share in the complaint, I thrust a lancet into the anterior part of the upper tumor; by which means a quantity of limpid serum was discharged, and the whole swelling immediately disappeared, leaving the spermatic vessels free, and easily distinguishable.

In a few days he left the hospital; and at the end of a year, or a little more, he came to me again, with the lower part of the scrotum full, but without any appearance of the tumor above. In short, his former state consisted of a complication of the encysted hydrocele of the spermatic chord with that of the tunica vaginalis testis: the former was cured by the first puncture, the latter was now as full as ever.

Considering the lad's age and temperament, I advised him to submit to the operation for the radical cure by incision; which operation was performed, and he got well in about seven weeks, nor has had any return of either complaint since.

CASE XII.

A MAN about thirty-five, who had for some years been troubled with a hydrocele of the

tunica vaginalis, which had often been emptied by puncture, came to me for advice.

The swelling in the scrotum, he said, was now about one third of the size-it used to be of, when he had been accustomed to have it tapped; it was not tense, was of an irregular figure, and plainly contained a fluid. But it was not on account of this tumor that he applied to me.

Within two months past he had discovered another small swelling, higher up towards his groin, perfectly distinct from the lower one: it was about the size of the largest French walnut, of an oblong figure, absolutely indolent, very tense, and left the spermatic process, at its exit from the abdomen, perfectly free.

From the appearance which these tumors made, and from the patient's account, I made no doubt of the nature of the case; *viz.* that the upper one was made by a collection of water, in a cyst, formed in the cellular membrane which makes the tunica communis of the spermatic vessels; and that the lower one was a true hydrocele of the tunica vaginalis testis.

Upon this presumption, I pierced the upper one with a lancet; and let out a small wine-glass full of clear limpid serum. The tumor immediately subsided, and left the whole spermatic process free; but the lower swelling was not at all affected by what had been done above. The puncture was well in a day or two; and the hydrocele of the vaginal coat not being full enough to be at all troublesome, he would

not permit me to meddle with that. At the end of about nine months he sent for me; his hydrocele was full and large, but he had not the smallest appearance of the tumor in the process. The water was let out by puncture, as usual; as it has been several times since; but he has never suffered any return of the collection in the process.

CASE XIII.

A LAD about fourteen years old was brought into St. Bartholomew's hospital for a rupture; which a surgeon (who had seen him at home) had told his friends was not in a situation to admit delay: and it being my week for accidents, I was sent for immediately. I found a large tumor, full and tight, possessing the whole spermatic process and scrotum, from the groin quite down to the testicle; which was independent of it, and perfectly distinguishable. As he lay on his back, it was perfectly indolent; but in an erect posture, or in the action of stooping, he complained of pain: it was not tender to the touch, unless pressed hard; and it was nearly of equal size from the top to the bottom: it bore so hard against the opening in the abdominal muscle, that I could, by no means, feel the spermatic process: he said, that it had appeared within a week, and that he had had no stool for five days past.

Some of these were circumstances of importance, and might be occasioned by a stricture

on the intestinal canal: but on the other hand, his pulse was soft, calm, and quiet, and his skin cool: he had neither tight belly, nausea, hiccough, nor vomiting; nor any other symptom (general or particular) deducible from such cause.

From the mere appearance and feel of the tumor, I should have supposed it to have been caused by water; but the difficulty of distinguishing the spermatic process above, the freedom of the testicle below, and the want of stools, made me hesitate.

But though I was in some doubt concerning the precise nature of the case, yet I was very clear there was no immediate necessity for an operation. Therefore, having found that I could not return any part of the contents of the tumor into the belly, I took away sixteen ounces of blood from his arm, ordered a clyster to be thrown up immediately, and two spoonfuls of a purging mixture to be taken every two hours, until a plentiful discharge per anum should be procured.

He took his mixture only twice, and had six large stools that afternoon; and when I saw him the next morning, he was perfectly well in health, but the tumor exactly the same. I examined it again and again, and was still more positive that it contained a fluid; but whether that fluid was in the tunica communis, or in a hernial sac, I could by no means be clear. However, as there was no possible method of getting rid of it but by an opening, I determined to

make one with such caution, as to be prepared for whatever might happen.

I made a small incision into the anterior and lower part: when I had divided the skin and cellular membrane, I found a firm hard membrane, which I took for the sac of an hernia: this I divided with the same caution, and gave discharge to a considerable quantity of serum; upon which the whole swelling immediately subsided, the spermatic process appeared in a natural state, and the opening in the tendon undilated.

The incision was dressed superficially, and healed in a few days.

Within less than half a year he came to me again, with the swelling as large, and under the same apparent circumstances, as before. His habit was so good, and I so well remembered the toughness of the cyst, at the first operation, that I made no scruple of advising him to have it laid open through its whole length. To this he submitted, and obtained a perfect cure.

CASE XIV.

A MAN about forty, servant to one of the governors of St. Bartholomew's hospital, came thither for advice concerning a rupture; which, he said, the surgeons in the country had often endeavoured to put up, but had never succeeded.

The groin and all the upper part of the scrotum was large and full; but the testicle below

very fair, and distinct from the tumor. The account which he gave was, that he first perceived the beginning of the swelling, in the evening of a day in which he had ridden a very hard fox chase, and had been a good deal hurt by a fall over his horse's head. That at first it was small; and that it had gradually increased ever since. That it had never been up since it first appeared. That he constantly felt a dull kind of uneasiness in it; and that it was very troublesome to him when on horseback, which he was frequently obliged to be, as his business was that of an huntsman. I examined the case carefully, and was satisfied that it was water, and not in the vaginal coat of the testicle. He had for some time worn a truss, which had rendered the part uneasy; had lived freely with regard to liquor; had a yellowness in his countenance, which had an unhealthy appearance; his legs were rather too full; and he had, for a little while past, been under the direction of a physician in the country.

I did not like his appearance, considering him as the subject of an operation, and therefore advised him to return into the country, and continue to follow his doctor's direction.

At the distance of three or four months, he came to the hospital again. He had now the appearance of very good health. His countenance was fresh; his appetite keen; his urine in proper quantity; and his legs fine. His tumor was larger; and he said it was become so troublesome, that if something was not done

for it, he must quit his service and go to the parish.

I could have wished, that his former state had been different; but having apprized him, how much that added to the hazard of any attempt toward curing him, I made an incision the whole length of the tumor, and gave discharge to a considerable quantity of clear water.

The cyst was firm and thick, and formed in the common *tela cellulosa* of the chord.

For three days the wound discharged a large quantity of serum, but it neither became tumid, nor inflamed; his pulse became hard and frequent; he was thirsty and restless, and had a languor in his countenance, which I did not like. On the fourth day the discharge of water ceased, but the incision still remained cold, lax, and flabby; and was so far from showing any tendency to suppurate, that, on the contrary, the edges began to be livid.

Bark, and cordial medicines, were prescribed by the physician; and fomentation, poultice, and animated digestive dressings were applied; but to no purpose. On the sixth day he complained of a burning heat in his back and kidneys, while his extremities were cold and damp; on the seventh he became delirious, and that evening died.

All the cellular membrane in the pelvis, and about the loins and kidneys, was excessively distended with air, and in several places dis-

coloured; and in the cavity of the abdomen was a large quantity of bloody water.

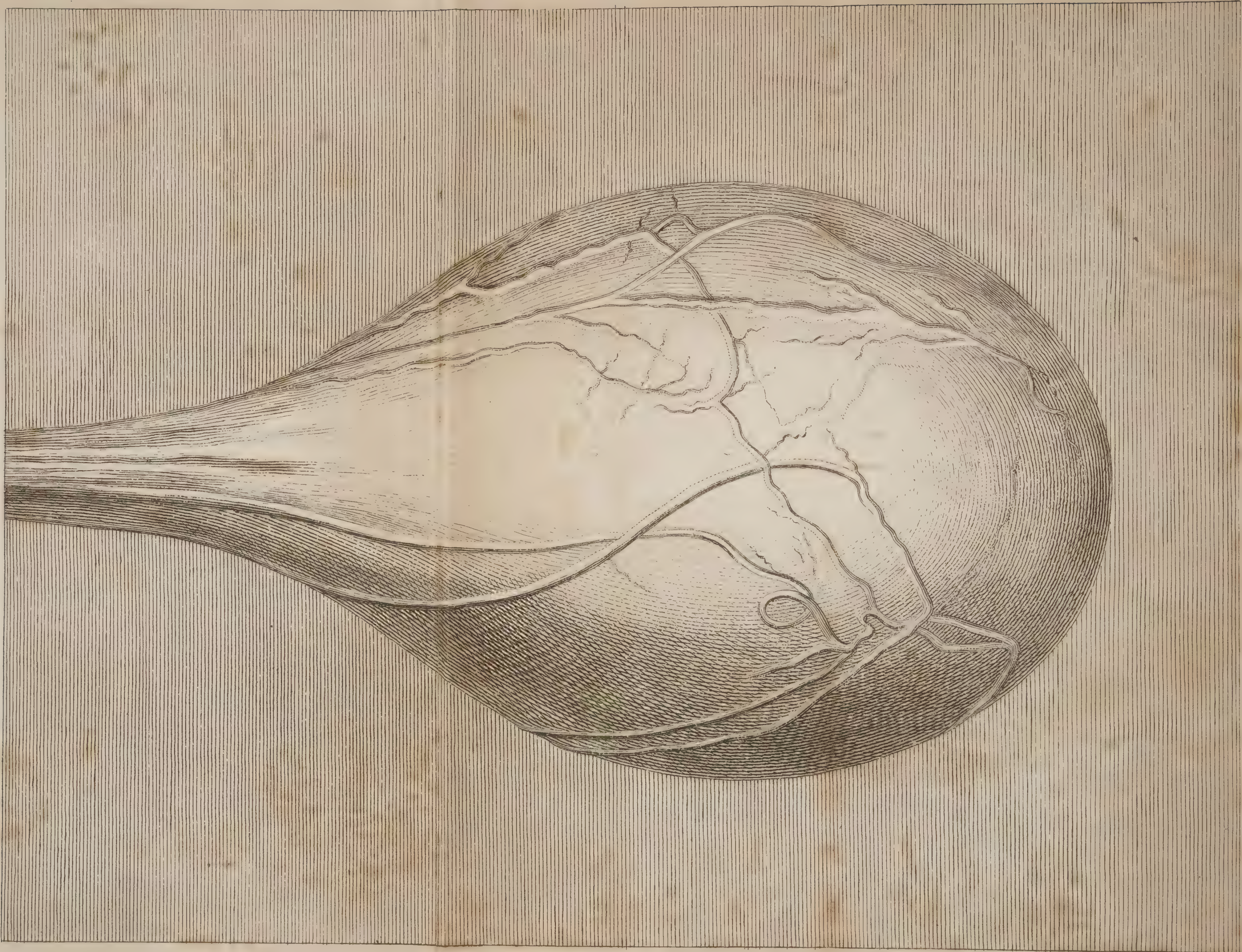
S E C T. VII.

HYDROCELE OF THE TUNICA VAGINALIS TESTIS.

THE third species of this disease, is that which is confined to the vaginal coat or bag, which loosely envelopes the testicle. In the short anatomical account already given of the production, structure, and situation of this tunic, it has been observed, that in a natural healthy state, its cavity always contains a small quantity of a fine fluid, exhaled from capillary arteries, and constantly absorbed by vessels appointed for that purpose.

This fluid, in the natural small quantity, serves to keep the tunica albuginea moist, and to prevent a cohesion between it and the vaginalis; a consequence, which almost necessarily follows any such diseased state of these parts, as prevents the due secretion of it. On the contrary, if the quantity deposited be too large, or if the regular absorption of it be by any means prevented, it will be gradually accumulated, and, by distending the containing bag, will form the disease in question.

The two preceding species of hydrocele have





their seat in the tunica communis of the spermatic vessels; that is, in the cellular membrane which invests them; one by a general diffusion of lymph through all its cells; the other by a collection of it, in one particular cyst or bag: that which makes our present subject has no concern or connexion with that membrane at all, but is absolutely confined to the tunica vaginalis testisⁿ.

It is a disease from which no time of life is exempt; not only adults are subject to it, but young children are frequently afflicted with it; and infants sometimes born with it. What is the immediately producing cause, I will not take upon me to affirm. Ruysch is of opinion, that it proceeds from a varicose state of the spermatic vessels. What real foundation there may be for such conjecture, I cannot say; certain it is, that the spermatic vessels are very frequently found

ⁿ Fallopius, although he was unacquainted with the real and true origin and nature of this disease, and supposed its manner of production to be very unlike what it really is; has yet given a very just account of the appearance, both of this and of the former: "*Alia vero est hernia aquosa, in qua aqua distillat per vasa et venas, occulto modo, ac sensim ad scrotum. Hæc autem est duplex; alia in qua continetur aqua in membrana adnata, et in proprio folliculo; alia in qua continetur in inguinali tunica quæ testem vestit. Cognoscitur aquam esse in tunica adnata quia separatur testis a parte aquosa manibus; præterea, ista hernia habet propriam circumscriptionem, aliquando rotundam, aliquando ovalem. Si autem fit in vaginali, non possumus amplius arripere et distinguere testem ab hernia; quoniam in eodem loco et aqua, et testis sunt constituti.*"

GAB. FALLOPIUS.

varicose, in persons afflicted with this kind of hydrocele; but whether such state of these parts ought to be regarded as a cause, or as an effect of the disease, is a matter worth inquiring into.

In Morgagni are some observations on the state of the parts concerned, particularly the inside of the tunica vaginalis, and outside of the albuginea; which, if repeated and confirmed, may possibly lead us on to further information.

In the mean time, from all the circumstances attending the complaint, it is pretty clear, that whatever tends to increase the secretion of the fluid into the sacculus, beyond the due and necessary quantity, or to prevent its being taken up, and carried off, by the proper absorbent vessels, must contribute to its production; which is so slow and gradual, and at the same time so void of pain, that the patient seldom attends to it, until it has arrived to some size. Not but that it sometimes is produced very suddenly, and in a very short space of time attains considerable magnitude.

The size and figure of the tumor are various in different people, and under different circumstances. In general, at its first beginning, it is rather round; but as it increases, it frequently assumes a pyriform kind of figure, with its larger extremity downward: sometimes it is hard, and almost incompressible; so much so, that in some few instances, it has been mistaken from an induration of the testicle: at other times it is so

soft and lax, that both the testicle, and the fluid surrounding it, are easily discoverable. It is perfectly indolent in itself; though its weight does sometimes produce some small degree of uneasiness in the back. The great characteristic (as it is called) of this disease, and on which almost all writers have agreed to lay the greatest stress, and to rest their proof of the nature of the disorder, I mean the transparency of the tumor, is the most fallible and uncertain sign belonging to it: it is a circumstance which does not depend upon the quantity, colour, or consistence of the fluid constituting the disease, so much as on the uncertain thickness, or thinness, of the containing bag, and of the common membranes of the scrotum.

If they are thin, the fluid limpid, and the accumulation made so quick as not to give the tunica vaginalis time to thicken much, the rays of light may sometimes be seen to pass through the tumor: but this is accidental, and by no means to be depended upon. Whoever would be acquainted with this disorder, must learn to distinguish it by other, and those more certain marks; or he will be apt to fall into very disgraceful, as well as pernicious blunders. The colour of the fluid is very different and uncertain; sometimes it is of a pale yellow, or straw colour; sometimes it is inclined to a greenish cast; sometimes it is dark, turbid, and bloody; and sometimes it is perfectly thin and limpid.

In the beginning of the disease, if the water be accumulated slowly, and the tunica vagi-

nalis thin and lax, the testicle may easily be perceived; but if the said tunic be firm, or the water accumulated in any considerable quantity, the testis cannot be felt at all; and other symptoms, or marks, must be attended to. In most cases, the spermatic vessels may be distinctly felt at their exit from the abdominal muscle, or in the groin; which will always distinguish this complaint from an intestinal hernia, the disease which it is most likely to be confounded with. It does indeed now and then happen, that the vaginal coat is distended so high, and is so full, that it is extremely difficult, nay, almost impossible, to feel the spermatic process; and it also sometimes happens, that the same kind of obscurity is occasioned by the addition of an encysted collection of water in the membrane of the chord; or by the case being combined with a true enterocele. These circumstances are not very frequent, but yet do occur often enough to render it well worth while to mention them; and to signify that, when they are met with, recourse must be had to other marks.

The general notion formed of this disease is, that it consists of a bag, filled with a fluid, in the middle of which the testicle hangs suspended, and by which it is completely surrounded.

This idea is not only erroneous, and contrary to fact, but may be productive of very mischievous consequences in practice. For from such conception (or rather misconception) of the state and disposition of the parts, it may be

inferred, that all points of the tumor are equally fit for such operation as may become necessary for the discharge of the fluid; which is so far from being the case, that in some parts of it, such operation is perfectly safe, easy, and harmless; in other it is hazardous, painful, and may be productive of the most dreadful consequences. Whoever will take the pains to examine the structure and disposition of the two coats of the testicle, the albuginea and vaginalis, will find, that in one part they are so inseparably united (being indeed one and the same membrane), that it is impossible for any thing to insinuate itself between them: while in every other part they are so absolutely unconnected, that from the great dilatability of the latter, a large quantity of fluid may be accumulated°.

In a hydrocele which is tolerably full, the place of this union is the posterior and superior, or rather the posterior and middle part of the tumor. A puncture or incision made here,

° “*Humor magna ex parte, in tunica Erythroide appellata, testiculum ambiente, in partem anteriorem colligitur; quæ potissimum membrana illa a testiculo separatur.*”

PAULUS ÆGINETA.

Mr. Le Dran, whose character in practical surgery stands deservedly high, seems to be less clear in his idea, and less perspicuous in his account of this disease, than of most others: his account is, “*Une vessie aqueuse placée sur l’un de testicules, auquel elle est adhérente; et comme elle devient quelquefois très grosse, elle remplit presque tout le scrotum.*” This does not (at least to me) convey an idea that the seat of this disease is within the tunica vaginalis testis.

will do no service, as it cannot reach the water, and therefore cannot answer the intention for which it ought to be made; but it will injure the testicle, or its epididymis, and thereby do great mischief; whereas an opening made in every other part, will not only give discharge to the water, but can do no harm, and is free from all kind of danger.

This natural connexion between the two tunics, at the upper and hinder part, is the reason why, in a simple hydrocele, that part of the tumor feels so very unlike to every other. In that, the tunica albuginea, and vaginalis, being immediately continuous, no water can get between them; and therefore, the fingers of an intelligent examiner must immediately discover the firmness and hardness arising from the union of these parts: in all others, the two membranes being unconnected, and affording a void space for the collection of water, the fluctuation of it will always be distinguishable.

This is a circumstance which must for ever discriminate the simple hydrocele of the tunica vaginalis, from the anasaruous swelling of the scrotum; from the encysted hydrocele of the chord; and from the intestinal hernia. The first is every way equal, tumid, and soft; and every where equally receives and retains the impression of the fingers: the second, though circumscribed, not very compressible, and affording the sensation of fluctuation, yet does not pit, and is alike to the touch in all parts

of it: and in the third, if the testicle be distinguishable at all, it is found at the inferior part of the whole tumor.

An indurated or scirrhus testicle has indeed, very frequently, a quantity of fluid lodged in its vaginal coat; which is a circumstance not to be wondered at; the diseased state of the gland being sufficient to account for the non-execution of the absorbent faculty, and consequently, for the collection of the water. But although part of this mixed tumor is undoubtedly owing to a fluid, and such fluid as is lodged within the vaginal coat, yet it is a very different disease from the true simple hydrocele, and ought not to be confounded with it; one of these marks of the latter being the natural, soft, healthy state of the testicle: and the characteristic of the former, being its diseased and indurated enlargement^p.

This is a point of more consequence, than it may perhaps, upon a cursory view, seem to be. It not only regards the definitions, but the treatment of the diseases: and being rightly understood, and attended to, or not, may be productive of much good or ill.

We are, by most of the writers on this sub-

^p When I say natural, soft, and healthy state of the testicle, I do not mean, that the testicle, in a true, simple hydrocele, is never altered from its natural state, when unaffected by any disease: I know the contrary; I know that the testicle, in a hydrocele, is very frequently enlarged in size, and relaxed in structure, as well as that its spermatic vessels are often varicose; I use the words in opposition to the diseased indurated state of the scirrhus testis.

ject, advised in operating for the radical cure of an hydrocele, to regard carefully the state and condition of the testicle; and if we find it enlarged, hardened, putrid, fungous, or any other way really diseased, to remove it immediately: which advice, within proper limitations, is certainly good. A testicle, in almost any of the just-mentioned circumstances, ought undoubtedly to be removed: but these cautions have nothing to do with the true, simple hydrocele; and can relate only to the diseased, the scirrhus, or the cancerous testicle. When these disorders are the subject of consideration, then such hints and cautions make a very necessary part of it; but they can have no concern with the present¹.

¹ “ Namque ubi forte vel putredo, vel scirrhus, vel alia
 “ quædam corruptio vehemens testiculum invasit, salutaris
 “ excindere.”

HEISTER.

This is also the doctrine of most of the writers (a large number in surgery) who have copied each other, both in their ideas of diseases, and in their proposed method of treating them.

Not writing from practice, or from what they have seen, they have related circumstances, under the article of the simple hydrocele, which never occur: and have directed a method of conduct, which, if followed, must mislead the surgeon, and subject the patient to pain, fatigue, and even loss of parts, without any the least necessity. Under the head of radical cure of the simple hydrocele by incision, Heister has mentioned several circumstances as necessary to be attended to for the regulation of the operator's conduct, which circumstances do not occur in that disease: “ Deligari autem vasa spermatica filo, rescindique testis
 “ culus omnino debet sicuti in cap. de sarcocele docuimus, quoties vasa seminalia, non insigniter tantum induruerunt,
 “ sed magnis quoque cruciatibus hominem ægrum affligunt.
 “ Despiciendum quoque porro est nam testiculus tumefactus

The truth is, that the majority both of the ancient writers and practitioners, misled by the sound of the term hydrocele, have mistaken a mere accidental effect for a cause; and have supposed that the fluid contained in the tunica vaginalis testis may not only constitute a disease by the mere distention of it, but may be productive of other diseases of the testicle itself. They have fancied the water to have in itself a

“ forte materiam aliquam fluidam, sicut quandoque contingit,
 “ intus contineat. Si quid enim fluidi intus hæere tactu percipi-
 “ mus, aut lympham, aut pus inibi consistere rectissime colligi-
 “ mus. Interim neque tunc *rescindere* continuo (ut nonnul-
 “ lent), sed incidere potius, atque expurgare testiculum istum
 “ conveniet, &c. Sed si forte simul nimis jam tunc induratus,
 “ vel corruptus idem inveniatur, predicta ratione, ligandus et
 “ resecandus, ne in carcinoma forte abeat.”

That such state of the spermatic vessels and testicle do occur, is beyond all doubt; but not in the simple hydrocele; not in the hydrocele that any rational practitioner can possibly deem fit for the attempt for the radical cure by incision. Neither is it possible for a man, who understands the disease at all, not to be acquainted with these circumstances before he attempts such operation; and if he is previously acquainted with them, he must be a very extraordinary man indeed to set about relieving them in such a manner. If the state of the testicle and its vessels be such as to require castration (a thing always capable of being known beforehand), let that operation at once be performed, in a proper and expeditious manner, and not by piece-meal, as it is here described. If castration be not requisite, neither can any other part of the operation (with regard to the testicle) be so; for, notwithstanding these descriptions of incisions into, and expurgations of, diseased testicles may make a figure in books, they are very unfit to be introduced into practice. They never can do good: they must do unwarrantable, and generally irremediable, mischief.

noxious quality, or disposition; and that the testicle, by merely swimming in it, might become diseased, and unfit for use; whereas in cases wherein a disordered state of the testis accompanies a collection of water in its vaginal coat, the truth is just the reverse of this supposition: the testis is first diseased, and the faculty of equal, regular absorption thereby interrupted; by which means a quantity of fluid is accumulated, and that mixed appearance produced, which is not improperly called *hydro-sarcocele*. But in this case, the extravasation of water is really the consequence of the morbid state of the gland; and (being still mere simple lymph) neither is, nor can be the cause of it.

They who choose it, may call this a species of hydrocele; and the literal sense of the word will certainly vindicate them; but they will by that means run the risk of confounding together two things extremely unlike to each other, and which require very different treatment: I mean the true simple hydrocele, in which the testicle is soft and sound (only perhaps a little more lax, and larger than ordinary), and the hydro-sarcocele, in which the testis is not only enlarged, but hardened, and not in a sound or healthy state: the former of these will permit such treatment with perfect safety; but in the other, may bring the patient into a state both of pain and hazard^r.

^r Some instances of this are related in this tract. Hildanus has given a particular account of a mistake of this kind: "Incise

It may indeed, and does sometimes, become necessary to let out the water from the vaginal coat of a testicle, in some degree diseased: but this should always be done with caution, and under a guarded prognostic; lest the patient be not only disappointed, by not having that permanent relief, which for want of better information he may be induced to expect; but be also (possibly) subjected to other unexpected inconveniences from the attempt.

Upon the whole, as just definitions, and accurate distinctions of diseases from each other, are absolutely necessary towards understanding them rightly, it seems to me much more proper to confine the term *hydrocele* to the mere simple accumulation of a fluid within the coats of the sound testicle, and to refer all those which either are combined with, or proceed from, diseases of that gland, to another class.

When the disease is a perfect, true, simple *hydrocele*, the testicle, though frequently somewhat enlarged, and perhaps loosened in its vascular texture, is nevertheless (as I have already observed) sound, healthy, and capable of executing its proper office: neither is the spermatic chord any way altered from a natural state,

“ *scroto plurimum affluxit aquæ, hinc primo subsedit scrotum;*
 “ *post paucos tamen dies secutus est dolor, vehemens inflam-*
 “ *matio et cancrum ulcus, maximeque malignum; quod*
 “ *adeo impetuose adjacentes partes occupavit, ut ipsius ma-*
 “ *lignitas nullo modo arceri possit; sed intra paucos dies*
 “ *maximo cum cruciatu e vita decessit.*”

except that its vessels are generally somewhat dilated; neither of which circumstances are objections either to the palliative or radical cure of the disease. But in those disorders, which in some degree resemble this, the case is different; either the testicle, or spermatic chord, or both, bearing evident marks of a diseased state. In the true, simple hydrocele, the water is accumulated merely from the non-execution of the office of the absorbent vessels; which (whatever ultimate cause it may have) leaves no appearance of real disease on the parts: in all the other collections of fluid in this part, there are such appearances and marks of distemper, as may clearly convince us, that the extravasation is only a consequence of such state.

The two principal complaints, liable to be mistaken for an hydrocele, are, that kind of scirrhus testicle in which an extravasation of fluid is made in the tunica vaginalis; and the venereal induration of the testicle, attended with the same circumstance. One of these is always a disease of the general habit; the other too often so.

One requires, and generally submits to, a proper course of specific remedies; for the other (notwithstanding all that has been said on the subject), we as yet know of none; and therefore it is seldom cured but by total removal. In neither of these, can the mere discharge of the fluid contribute any thing material toward a cure; and in both of them, such attempt, inju-

diciously made, has often proved both painful and hazardous.

In the true venereal sarcocoele, or indurated testis, the disease ought always to be eradicated from the habit before any attempt be made locally: the mere discharge of the water can never remove the obstruction in the gland; but when such obstruction has been by proper remedies removed, it is no uncommon thing to have the extravasated fluid again absorbed; or if it be not, and any operation becomes necessary, a soft, easy, healthy state of the testicle, is certainly preferable to an indurated diseased one.

These two cases, or, to speak more properly, these two states of the testicle, although they agree in this one circumstance of not being essentially relieved by the mere evacuation of the water, do yet differ so widely in almost every other, that it behoves practitioners to be very careful in distinguishing between them. That method of treating the venereal induration, which is most frequently successful, will prove highly prejudicial in the scirrhus hardness. By mercury, in judicious hands, the pocky patient's disease may be removed, and his health restored: but I have hardly ever seen a scirrhus or cancer that was not exasperated, and made worse by it. Or, if that does not happen, yet, a mercurial course, in such case, will always occasion a loss of time, which is not always retrievable. In short, he who treats a scirrhus testicle as he ought to do a venereal one, will not cure the disease, but waste his patient's time,

and hurt his general health : and he who treats a venereal one as he most frequently ought to do a scirrhus, will, without any necessity, submit his patient to a painful operation, and thereby deprive him of a part very essential to him as a man.

CASE XV.

A GENTLEMAN, about thirty years old, showed me his testicle, which was both enlarged and hardened, and had very palpably a quantity of fluid in the vaginal coat. He had been told, that it was a water rupture, and that it might be immediately cured by means of a small incision.

The whole testicle and epydidymis was (as I have already said) large and hard; and so was the vas deferens, and part of the spermatic process; but there was no kind of inequality on the surface; neither did it give the patient any pain, except what proceeded from its mere weight. He had some brown spots on his breast; a hardness below the frænum penis; a raggedness and induration of the edges of the sinis of the left tonsil; a pale plumbean countenance; and complained much of frequent pain in his knees and elbows.

I made no scruple to inform him that he appeared to me to be poxed; and that I did verily believe, that the disorder in his testicle arose from the same cause. I took pains to dis-

suade him from submitting to any attempt toward curing his local complaint in the testis, until he should have got rid of the disease which had infected his whole habit, by assuring him, that if what had been proposed to him was intended merely to let out the water, it could not even contribute to his being made well; and that if more than that was designed, he might probably experience more harm than good from the attempt. Not satisfied with my opinion, he went to Mr. Sainthill, who gave him the same kind of advice.

In a little time he applied to a gentleman well known for promising impossibilities; who told him, that this was a disease with which the faculty were perfectly unacquainted; and if he would give him ten guineas, and take a lodging near him, he would undertake to cure him in a week.

He made an incision of about half an inch in length, in the very inferior part of the tumor, and let out a small quantity of bloody water; and then applied a pledget of lint, and a piece of sticking-plaister. The patient passed the night in a good deal of pain, and in the morning found his testicle much swelled, and very uneasy. He sent for his operator, who said, that this was of no consequence, and that if he would keep quiet that day, he would be very well the next. On the third day his testicle was so large, so inflamed, and so painful, that he became exceedingly alarmed, and sent for me.

I found the scrotum highly inflamed; the

testicle and spermatic process large and hard; his pain exceedingly great; his pulse hard, full, and frequent; and his skin hot and dry. I bled him freely, and ordered him a clyster and a lenient purge, and wrapped the testicle up in a soft poultice. Next day, both the patient and the parts were in the same state. I bled him again; and his clyster and purge having thoroughly emptied him, I gave him two grains extract. thebaic. and directed that he should take one grain every six hours, until some ease or rest was procured. Two days were spent before any remission of symptoms was obtained: and it was near a fortnight, before the constant use and application of fomentation, cataplasm, &c. together with a general antiphlogistic regimen, and confinement to bed the whole time, had reduced the testicle to such state as to bear examination. When it became capable of this, it was found large and hard, but without any water in the tunica vaginalis. His general habit being recruited by a proper regimen, country air, and the bark, he was then put into a mercurial course, by inunction; under which all his other symptoms gradually disappeared, so likewise did his induration of the testicle.

CASE XVI.

A POOR labouring man in Essex got a venereal hernia humoralis. As his daily work would not permit him to take proper care of himself, it was a considerable while before he had got rid of his

inflammatory symptoms; and when he had so done, a part of the testicle, and the whole epididymis were left hard, and rather too large. In getting over a high stile he missed his footstep, and struck his scrotum with violence against the upper rail: the blow gave him excessive pain for some minutes; but that soon ceased, and he went on with his day's work. Next day his testicle appeared swelled, and was painful to the touch; but as the man had no subsistence but from his labour, he was obliged to follow it. At the end of a week, he was so much worse that he could go out no longer; and making his case known to some gentlemen, who used to employ him, a neighbouring practitioner was desised to visit him. A fluctuation being felt, it was supposed to be matter; and a warm adhesive plaister was applied to forward it. In a few days an opening was made for discharge of the supposed *pus*, but nothing followed except a very small quantity of bloody serum. The smallness of the quantity, and the nature of the fluid, joined to the very small subsidence of the tumor, induced the surgeon to think he had not gone deep enough; and to thrust a lancet further in: this was attended with acute pain, and followed by a copious hæmorrhage, which was not easily restrained; or, to speak more properly, did not soon cease. Inflammation, pain, tumefaction, &c. followed this method of proceeding; and at the end of a week, the man was brought to St. Bartholomew's hospital.

Upon mere sight of the part, I should have supposed the case to have been a scirrhus of the malignant kind: the testicle, or scrotum, was large, hard, unequal, of a deep red dusky colour, with distended veins, and so painful that it could not bear the slightest touch; and the spermatic process was far from being in a natural or a healthy state. The man complained of constant pain in his back; the wound discharged a bloody, offensive gleet; and long pain, and want of rest, had given him a very diseased aspect.

Nothing but the clear and circumstantial account, which both the man and the surgeon who had attended him (and who came with him to the hospital) gave, could have induced me to have thought the case to be any other than what I have just mentioned: but they were so positive, and so consistent, that I thought myself obliged to regard what they said, and to act accordingly.

By phlebotomy, evacuations, anodynes, rest, a low regimen, and the general antiphlogistic method, pursued vigorously and long, he got a cure.

CASE XVII.

A GENTLEMAN about thirty-seven years old, apparently in good health, asked my advice concerning a diseased appearance in his scrotum, for the relief of which he had come from a considerable distance to this town.

The testicle was not much increased in size, but had lost its equality of surface, and was craggy, and very hard; and the vas deferens and epididymis were in the same indurated state; the spermatic chord was somewhat varicose, but not hard; and in the cavity of the tunica vaginalis was palpably a small quantity of fluid. It was somewhat tender to the touch; but the pain upon being handled was very slight; in comparison of what was felt an hour or two after such examination: at which time, although the pains were not constant, but rather attacked the part by intervals, yet they were extremely acute.

He said, that he had been told that his complaint was venereal (to which opinion his method of life much inclined him to adhere), and that he had also a beginning hydrocele. I replied, that I wished, for his sake, that I could think so too; but that I had no doubt of its being a scirrhus, which would not long remain quiet. He seemed dissatisfied; and said, that considering the person who had pronounced his case to be venereal was a man of character in his profession, and whose judgment he believed was good, he thought I was rather too peremptory.

I desired him to take the opinion of some people of eminence in London, and named some to him: whether he did or not, I know not; but in about a fortnight or three weeks, I received a letter from him out of the country, signifying, that his friend was so clear in

his first opinion, that the case was venereal, that he had prevailed on him to submit to a salivation for it; and that he only now desired my opinion concerning the best method of procuring it; that is, whether he should attempt it by internals, or by mercurial inunction. I wrote back, that I was sorry to differ from his friend, or to seem too tenacious of, or partial to, my own opinion, and sincerely wished I might be mistaken; that I looked upon the method of salivating by inunction to be in general the least fatiguing or prejudicial to the constitution; and that in the case of particular, local induration, it certainly had the advantage of being applied immediately to the part affected; and therefore, if I could think that his complaint was venereal, I should undoubtedly prefer the use of the ointment to every internal means; but that I was so thoroughly satisfied that it was not, and so averse to the use of mercury for him, that I desired him to keep that letter as my protest against the process he was going into.

The ointment was freely used for above a month, but no alteration appeared in the testicle, except that it became rather larger, and more tender to the touch.

As the mercurial ointment happened not to affect his mouth, or make him spit any considerable quantity, the inefficacy of it with regard to the testicle was imputed to that; and a course of the *mercurius calcinatus*, with the *kermes mineral*, undertaken and followed for

another month. During this, the testicle manifestly increased in size, became more unequal, and more frequently painful. He now came to London again; and calling on me, told me all that had passed; but being still possessed with the venereal idea, said that he was come hither in order to try the Lisbon diet-drink, or something of that kind.

At my request he showed his disease to Mr. Nourse and Mr. Sainthill, who were clear that it was not venereal, and advised the operation. This he would not hear of at present, having got it into his head that when every thing else had been tried, it would always be time enough for that. During three weeks that he staid here, he drank, by the direction of some friend, every day a quart of strong decoction of sarsaparilla, with some of the sublimate solution in it. The testicle continued to increase, and the spermatic vein became somewhat varicose: but still there was a fair opportunity for extirpation. He did now indeed begin to incline to it; but being considerably reduced in strength and flesh by what he had taken, he would not comply with it until he had been in the country, and was somewhat recruited: to which I could not object, as he then did not appear to be a fit subject for such an operation; I mean, on account of his great reduction of strength.

At the end of two months, he came to me again. I was much concerned to see him so much altered for the worse; he was emaciated to the greatest degree; and had such a leaden

paleness in his countenance, that had I known nothing of him, I should have concluded that such a man had a cancer about him. He had totally lost his appetite, and was never free from pain: his testicle was at least twice the size as when I last had seen it, and the whole process, quite up to the belly, large, hard, and knotty.

I would now by no means propose the operation: a consultation of physicians was therefore had, in which the solanum was prescribed. This was immediately tried, and proved here, as it has wherever I have seen it used; that is, the patient was much disordered by it in general, and received no benefit with regard to his disease: but as this affair happened not long after this poison had been in a kind of vogue, it was repeated until the patient could hardly see or hold his hand still. When this was laid aside, recourse was had to the cicuta, which, as usual, was perfectly inefficacious: to it, however a fair trial was given. And when the poor man had thus made experiment of our most boasted specifics, and was satisfied, that no honest or judicious man would attempt the operation, we had recourse to opium, during a few weeks that he existed.

When dead, I examined him.

The spermatic process was thoroughly diseased, about half-way up from the groin to the kidney; that is, it was enlarged, hard, and very full of knots; but I did not find any apparent disease in any other part within the

CASE XVIII.

I RECEIVED a letter from Lincolnshire, in the month of November, desiring to know whether that season of the year was an improper one for the operation of castration, in the case of a scirrhus testicle; for that, if I did not, a patient labouring under such complaint would set out immediately upon the receipt of my answer.

I wrote back, that the state and nature of the disease were of much more consequence toward determining the propriety or impropriety of an operation, than the time of the year could be: and therefore I desired either that I might have a circumstantial account of the case from some medical man, or that the patient would come to London. In about a week I received another letter, containing the following account.

That the patient was thirty-five years old; that previous to the appearance of the disease in the testicle, he had for some weeks been troubled with frequent and acute pains in his back and loins; that the testicle was considerably enlarged, indurated, and (in its posterior part) unequal in its surface; that part of the spermatic process, nearest to the testis, was too hard also; that the whole of it was now perfectly free from pain; that the patient was a married man, much subject to scorbutic eruptions and flying pains, from the same cause; that his appetite was

fallen off, and his aspect become pale and wan; that he had taken a considerable quantity of the cicuta, and as much of the infusion of the solanum as his weak state would bear; that from the former he had neither experienced good nor harm, but that the latter had disagreed with him extremely; that he was now determined for the operation; and that he would be in London in a few days.

In less than a fortnight he came to me. He was extremely thin; and had a countenance so pale, and eyes so languid, that I made no doubt that his nights were sleepless. His testicle was large and hard, but perfectly equal, and perfectly indolent; the tunica vaginalis contained a small quantity of limpid fluid; and the vas deferens and epididymis had that kind of enlargement and induration which frequently accompanies a hernia humoralis: but the spermatic vessels were in a natural state, of proper size, and free from all kind of induration. He was so hoarse, that I could hardly hear him speak; and so deaf, that it was as difficult to make him hear. He complained much of frequent pains in his shoulders and elbows, one of the latter of which was considerably stiffened. The biceps muscle of the left arm was hard and gummy; on one of his eye-brows was a large spot, with a thin scab on it; and, between the scapulæ, were four or five of the same.

I told him, that I had no doubt that his deafness, hoarseness, pains, spots, swellings, &c. were all venereal; and that I was much inclined

to believe, that the complaint in his testicle proceeded from the same cause. He did as venereal patients are frequently too apt to do; that is, he endeavoured to render my opinion improbable, by attesting, that there had been an interval of some years since he had held any illicit commerce with any woman whom he could suppose capable of injuring him; that he had been two or three years married; had only had a slight shancre, of which he was sure he had been well cured, &c.

I answered, that I was clear in my opinion; and would undertake to serve him on no other principle; but desired him to take the judgment of some other gentlemen of the profession; which he did, and returned to me again with an account, that they thought of his case as I had done.

The weakened reduced state in which he was, and a natural disposition which he had to a hæmoptysis, obliged me to proceed very cautiously: his stomach would bear no medicine of the mercurial kind; and a very little acceleration of pulse made him hawk up a bloody phlegm. I therefore determined upon the ointment in small quantities, and to do in this case what I have done in similar cases several times; that is, as soon as ever the mercury raised the pulse, or began to affect the mouth, I ordered him to take a decoct. corticis twice or thrice a day, through the whole of the salivation.

By these means he got rid of all his complaints, both general and particular, and came

out of his mercurial course with a more healthy aspect, and more flesh on his bones, than he went into it.

Before I proceed to give an account of the means used for the relief, or cure, of the hydrocele of the tunica vaginalis testis, it may not be improper to inform the reader, that I have twice in my life seen this disease, though in a confirmed state, and in adult patients, disperse.

CASE XIX.

A GENTLEMAN about forty-five years old consulted me on account of a swelling in his scrotum, which was not very large, but palpably contained a fluid, and was so circumstanced in every respect, as to prove it to be a true hydrocele of the vaginal tunic; from which I advised him to have the water immediately drawn off.

As it was not very troublesome to him, he did not choose to have it done then; but went away, telling me that I should soon see him again. He took the opinions of two others, both of whom told him the same thing, and gave him the same advice.

At the end of half a year he came to me again, with the scrotum full, and of a pyriform figure, and so large as to be very evident through his breeches.

I would have tapped him immediately; but as he had never seen any thing of the kind, I could not convince him that it would not confine

him the next day; and as he had some particular business to transact in the country, he chose to go thither first, and to submit to the operation when he should return from thence.

I saw no more of him for near two months; at the end of which time he called upon me, and showed me a scrotum perfectly empty, and free from disease.

Taking it for granted that he had been tapped, I asked him who had done it for him: he told me, that before he could finish the business for which he went into the country, he was seized (for the first time in his life) with a severe fit of the gout, which had confined him to his bed for six weeks; during which confinement, his swelling had gradually and totally dissipated.

I have often seen him since; and he still remains perfectly free from all appearance of disease.

CASE XX.

A MIDDLE-AGED man showed me a hydrocele of the vaginal tunic, which had been near two years collecting, but from which the water had never been drawn: I advised him to have it done soon, and he fixed on the next morning.

In his way home he got fuddled; fell down into the area of an empty house; and in his fall struck his scrotum against a piece of scaffolding.

In the morning early he sent for me. I found him in bed, with a great ecchymosis under the

skin of the scrotum, which was much swollen, and very painful. I would have persuaded him to have permitted me to let the water out (thinking thereby to have taken off part of the tension), but he would not consent; and I was obliged to have recourse to fomentation, cataplasm, &c.

In about a fortnight, all the ecchymosis was dissipated, and all the swelling from the sound side of the scrotum; and both the patient and myself thought, that the tumor from the hydrocele was considerably less than it was before the accident. By persisting in the same method for about three weeks more, the whole of it disappeared, nor has returned since. Nor have I, ever since, seen the same attempt succeed.

SECT. VIII.

METHODS OF CURING THE HYDROCELE OF THE VAGINAL COAT.

THE methods of cure (as they are called) in this species of hydrocele, though various, are reducible to two; *viz.* the palliative, or that which pretends only to relieve the disease in present, by discharging the fluid; and the radical, or that which aims at a perfect cure, without leaving a possibility of relapse. The end of the former is accomplished by merely opening the containing bag in such manner as to let out the water: that of the latter cannot be obtained



unless the cavity of that bag be abolished; and no receptacle for a future accumulation left. One, may be practised at all times of the patient's life, and in *almost* any state of health and habit; the other lies under some restraints and prohibitions; arising from the circumstances of age, constitution, state of the parts, &c. &c. &c.

The palliative cure (as I have just observed) consists in merely giving discharge to the fluid which is contained in, and distends, the tunica vaginalis.

The operation by which this may be accomplished, is a very simple one. The only circumstances requiring our attention in it, are, the instrument wherewith we would perform it; and the place or part of the tumor, into which such instrument should be passed.

The two instruments in use, are the common bleeding lancet, and the trocar.

The former having the finer point, may possibly pass in rather the easier (though the difference is hardly perceptible), but is, in my opinion, liable to inconveniences, to which the latter is **not**. The trocar, by means of its cannula, secures the exit of the whole fluid without a possibility of prevention; the lancet cannot. And therefore it frequently happens, when this instrument is used, either, that some of the water is left behind, or that some degree of handling and squeezing is required for its expulsion; or, that the introduction of a probe, or a director, or some such instrument, becomes necessary for the same

purpose. The former of these may in some habits be productive of inflammation^s: the latter prolongs what would otherwise be a short operation, and multiplies the necessary instruments; which, in every operation in surgery, is wrong. To which it may be added, that if any of the fluid be left in the vaginal coat, or insinuates itself into the cells of the dartos, the patient will have reason to think the operation imperfect, and to fear that he shall not reap even the temporary advantage which he expected. The place where this puncture ought to be made, is a circumstance of much more real consequence; the success of the attempt, the ease, and even sometimes the safety of the patient, depending upon it.

Whoever conceives, as many have done, and some still do, that the testicle hangs loose in the middle of the water within the vaginal coat (like a clapper within a bell), must also suppose that every part of the general tumor is equally fit and proper for this operation. The idea is erroneous, and the experiment may prove highly mischievous. All the anterior and lateral parts of the vaginal coat are loose and detached from the albuginea: in its posterior and superior part, these two tunics make one; consequently the testicle is, as it were, affixed to the posterior and superior part of the cavity of the sac of an hydrocele;

^s A consequence which I have seen to proceed from it, attended with a slough of the whole dartos, and which I am much inclined to believe would not have happened in the same person, had the water been drawn off by a trocar.

and consequently, the water or fluid can never get quite round it. This being the state of the case, the operation ought always to be performed on that part of the tumor, where the two coats are at the greatest distance from each other, and where the fluid must therefore be accumulated in the largest quantity; and never on that part of it where the fluid cannot possibly be. The consequence of acting otherwise, must not only produce a disappointment, by not reaching the said fluid; but may prove, and has proved, highly and even fatally mischievous to the patient.

It was a custom formerly, after performing this operation, to make use of fomentations and discutient applications, upon a supposition that by such means a return of the disease might be prevented. Among the old writers, are to be found the forms of medicines to be applied to the groin and scrotum, to prevent a future descent of the fluid; but anatomy and experience have proved the falsehood of such supposition, and the absurdity of such applications: the present practitioners content themselves with a bit of lint and a plaster; and, if the scrotum has been considerably distended, they suspend it in a bag truss, and give the patient no further trouble.

In most people, the orifice thus made heals in a few hours (like that made for blood-letting); but in some habits and circumstances, it inflames and festers. This festering is generally superficial only, and is soon quieted by any simple dressing; but it sometimes is so considerable, and extends

so deep, as to affect the vaginal coat, and by accident produce a radical cure. I have also seen it prove still more troublesome, and even fatal: but then the circumstances, both of the patient and of the case, have been particular, and such as required attention. (See Cases XXI and XXII.)

Whether it arose from a fear of wounding the testicle in the operation, or from a supposition that while the quantity was small it was more likely to disperse, or that while there was but little fluid, they did not think the disease sufficiently characterised, or from some other reason which they have not thought fit to give us; but many writers of good authority (and among them Mr. Serjeant Wiseman) have forbid the puncture in an adult, while the quantity may be supposed to be under a pint: which restriction is still scrupulously attended to by many practitioners, to the no small trouble and inconvenience of their patients.

When there is a sufficient quantity of fluid to keep the testicle from the instrument, there can be no reason for deferring the discharge; and the single point on which this argument ought to rest, is this: “Whether the absorbent vessels, “by which the extravasation should be prevented, “are more likely to reassume their office, while “the vaginal coat is thin, and has suffered but “little violence from distention; or after it has “been stretched and distended to ten or perhaps “twenty times its natural capacity, and by “such distention is (like all other membranes)

“ become thick, hard, and tough.” For my own part, I think the probability so much more on the side of the former, that I should never hesitate a moment about letting out the water, as soon as I found that the puncture could be made securely. And from what has happened within the small circle of my own experience, I am inclined to believe, that if it was performed more early than it generally is, it might sometimes prevent the return of the disease.

CASE XXI.

A GENTLEMAN, turned of sixty, came to me with an hydrocele of the tunica vaginalis.

He was corpulent, full habited, inclined to be asthmatic, and subject to an irregular kind of gouty inflammation, which attacked different parts of him, at different times. The disease was on the right side, the scrotum much distended, and on the skin of it was an inflammatory kind of blush. His pulse was hard, and as I thought too frequent; and he seemed to me to have a degree of heat and thirst, not consistent with health. His age, his habit, his general state, and what I apprehend to be the state of the sac, all forbade any attempt but the puncture; and I took some pains to dissuade him from that, until he should have removed both his general complaints, and the local inflammation on the scrotum. He said that he felt himself perfectly well; that he was sure he had no gout about him then; that what I took

for an inflammation on the scrotum was only a scorbutic eruption, to which he was frequently subject; and concluded with a hint, that he thought whatever should be done previous to letting out the water, could be designed only for my own benefit, by lengthening the time of my attendance.

I pierced the middle and anterior part of the scrotum with a small trocar, and drew off near a quart of a greenish fluid; I put a bit of lint and plaster on the orifice; and as the empty scrotum hung very loose and flabby, I persuaded him to let it be suspended in a bag-truss.

In the afternoon he went out; and at night finding that the plaster was rubbed off, and thinking that the suspensory was put on for no other reason but merely to keep the dressing on, he took off his bandage.

Next day he went out again, walked a good deal, drank freely after dinner, and when he came to his lodging in the evening, he went to bed much out of order. In the night he had a severe rigor, for which he took a large spoonful of a tincture of snake-root and saffron, which he always kept by him.

On the third day, finding his scrotum much swollen, and very uneasy, he sent for me.

I found him in bed, complaining of great pain in the lower part of his belly and groin; his pulse was quick, hard, and irregular; his skin hot; his tongue dry, and black; his countenance flushed; and his intellects not quite

steady. His scrotum was swelled and inflamed all over; and in a part, considerably distant from the puncture, was a mortified spot as big as a shilling.

After I had dressed him, I desired, as he was quite a stranger to me, as well as to the people of the house where he lodged, that he might have more assistance: accordingly a physician was sent for, who prescribed for him. At the end of three days one half of the scrotum was completely mortified; and in about seven more it cast off, with so large a portion of the tunica vaginalis, that I had no doubt that none of it was left.

The gout now made an attack on his feet, and the inflammation left all other parts: the sore put on a good aspect, and in a short time he got well. But notwithstanding the very large portion of the vaginal coat which came away in a slough, I have twice since drawn off a full pint of water from the same side.

CASE XXII.

A MAN about forty, afflicted with a large hydrocele of the tunica vaginalis, and which, from a misapprehension of the true nature of the disease, he had never consulted any body about, having been robbed by a servant of a considerable sum of money, was obliged to travel very hard, on horseback, from the neighbourhood of Exeter, to London.

When he set out, his scrotum was free from

all disease, except its distension by the water; but when he came to this town, it was covered all over with an inflammation of the erysipela-tous kind; was much increased in size, and very painful to the touch. He was much fatigued with his journey; and just before he went to bed in the evening, had a shivering, which was followed by a very restless night, and a considerable degree of fever. In the morning his scrotum was so much inflamed, that he was alarmed at the appearance, and sent for assistance. The person who came to him, immediately made an opening, by means of a pointed knife, into the tunica vaginalis, and gave discharge to a considerable quantity of water; but by night, the whole scrotum was mortified. That evening I saw him, but without any hopes of being able to serve him. His pulse, which had been full, hard, and rapid, was now small, and faltering; his head was very unsteady, and his extremities cold; all the tumefaction of the scrotum was gone, and it seemed one large eschar. On the next morning he died.

Now, though it be very possible, that the same appearance and event might have ensued, if no puncture had been made; yet I think it is very clear, that it would have been more prudent to have tried first what a soft cataplasm and an antiphlogistic method could have done. For, by making the opening hastily, and without a proper prognostic, the operator (whether deservedly or not) incurred all the blame.

CASE XXIII.

A POOR man was brought from the neighbourhood of Rosemary-lane to St. Bartholomew's hospital.

His scrotum was of prodigious size; very hard, excessively inflamed, quite up to his groin; it was of a dusky red colour; extremely painful to the touch; and in one part seemed inclined to sphacelate: the spermatic process also was considerably thickened. He had a hard, full, rapid pulse; a hot skin, a flushed countenance, great thirst; and complained of most excruciating pain in his back.

The account he gave was, that he had, for some years, been troubled with a swelling on the right side of his scrotum, which some of the surgeons of St. Thomas's hospital had told him was a water-rupture, and would have tapped; that he had also applied to several rupture-doctors, each of whom had sold him a bandage, and some of them had pretended to cure him by medicines and applications; that finding no relief from any of these, he had a few days before given an itinerant stage-quack three guineas to cure him. That this operator laid him on his back, on a couch, and lifting up the tumor, thrust an instrument into it. That no discharge followed but blood. That it bled for near a quarter of an hour, and then stopped upon his fainting away. That from the time of

this operation (which was two days) he had been in extreme pain; and, that his operator not coming to take any care of him, his friends had brought him to the hospital. He was immediately bled, had a clyster injected, and the scrotum was enveloped in a soft, warm poultice, and tied up in a bag-truss. When he had passed a stool, I ordered him a grain of extract. thebaic. to be taken immediately, and repeated again at the distance of six or eight hours. Next day he was much the same in every respect; his pain was excessive, particularly in his back, and he had not closed his eyes. I bled him again freely (he had two stools in the night), and gave him two grains of opium, and direction to repeat one grain every six hours until he got ease and sleep. His scrotum was well fomented, and the cataplasm continued. Two days more were spent in this manner, before we obtained any remission of the symptoms: when that was done, I pierced the anterior part of the tumor, and drew off more than a pint of bloody serum. The testicle now appeared very much enlarged, and hardened; but, by persisting in the antiphlogistic method, he at length got well.

I suppose the reader will have as little doubt as I have, that all this mischief was produced by wounding the testicle, or epididymis.

CASE XXIV.

A YOUNG fellow, who was waiter at a tavern in the city, and who had for some months past laboured under a succession of pocky symptoms, had at last a true venereal sarcocele, with a small quantity of fluid in the vaginal coat.

As he had several other venereal symptoms then upon him, and his way of life subjected him to great irregularity, I advised him to obtain leave to quit his place, and attend to his cure. This he did not choose to comply with; and I heard no more of him till about a month afterwards, when his master desired me to call at his house.

I found the lad in bed, with a high fever, and with his scrotum swelled and inflamed to a very great degree. He said, that two days before, he had met with an acquaintance (a surgeon's mate of a man of war), who told him, that his whole complaint was a water-rupture, and that for a bottle of claret he would cure him immediately. That he had thrust a lancet deep into the lower part of the swelling; that nothing followed but blood; that he had spent some minutes in poking into it with a probe, in hopes of getting the water out, but ineffectually; but that he had been in racking pain ever since. Phlebotomy, clysters, opiates, febrifuge medicines, &c. were all employed, by which means his pain, fever, &c. were at length got the better

of; but almost the whole testicle cast off in one large slough.

MEANS FOR A RADICAL CURE.

EVERY other method of treating this kind of hydrocele, except the puncture, was either originally intended to obtain a radical cure; or, having been found to have been often productive of such, has been, by different people, ranked sometimes among the palliative, sometimes among the radical means.

In many of the old writers are found directions for obtaining the cure of this disease by the use of a seton, a cannula, a tent, a caustic, a ligature, an injection, or an incision.

Some of these are adopted or preferred by one, and some by another, according to the theory which they entertained of the disorder, or to the benefits which they had seen to have accidentally arisen from the use of the said means.

To reduce these under some kind of method (which the manner of their being delivered to us does in general not very easily admit), we may say, that the seton, the tent, and the cannula, were either originally meant to palliate a disease, of which the old practitioners had very disagreeable apprehensions; or that they were made use of upon a supposition that the fluid contained in the cyst was in itself noxious; or that the general habit of the patient was

relieved, and many other disorders prevented by the said humour falling, or being deposited in that part; or from an opinion that the cure of it ought not, by any means, to be hastily or rashly attempted; that the caustic, cautery, and ligature, were designed to prevent the supposed descent of the water from the abdomen into the scrotum; and, that the injection was calculated for the constriction of a supposed breach in lymphatic vessels.

Some of these (happily for mankind) are now quite laid aside, the reasons for their use being found to be false and groundless: of this kind are the cautery, the ligature, and the injection. The water is now, by every body who has made any inquiry into the matter, known to be formed and collected in the part where it is found; and not to have fallen into it from the belly: and, though an obstruction in the lymphatic vessels of the spermatic chord, may in some degree prevent the regular and due absorption of the fluid from the vaginal tunic, yet no breach or rupture of such vessels can ever produce the disease in question: the extravasation, in such case, must be in another part; and may possibly cause a hydrocele of the cellular kind, in the common membrane of the spermatic vessels, but which can never be found within the tunica vaginalis.

The reasons originally given for the use of the tent and the cannula, *viz.* the noxious quality of the fluid, and the necessity of a gradual cure, are now also known and ac-

known to be without foundation; and therefore though these methods, or methods like these, do still continue to be used, yet it is with another view, and upon other principles: not with intention to lengthen the time of a cure, by making a gradual drain for the prevention of other disorders; but merely to abolish the cavity of the tunica vaginalis, by having excited and maintained such a degree of inflammation and suppuration, as shall produce an union between that coat, and the albuginea testis.

This is indeed the only rational end which can, by any of these means, be pursued: for the disorder being absolutely local, and the tunica vaginalis (the seat of it) most commonly somewhat altered from its natural state, by having been distended, unless the absorbent vessels can again be restored to a capacity of doing their duty (a circumstance which does not very often happen), the arteries will continue to exhale new serum into the cavity, and the hydrocele will still remain, or be renewed in a short time after each discharge.

To obtain this end, two kinds of means are proposed: in the use of one, it is intended, by means of a small wound, to excite such a degree of inflammation, as shall occasion, or be followed by a total and absolute cohesion of the tunica vaginalis with the tunica albuginea. In the other, a larger and more free incision is made; whereby the cavity of the former of these coats is converted into a hol-

low or open sore, or ulcer, to be filled up by a new incarnation; or else, a part of the said tunic being cut away, its power of again holding the extravasated fluid is equally prevented.

The first, or union of the two coats in consequence of inflammation, has sometimes been found to follow the use of such means as were intended to procure only a temporary relief: it sometimes follows the simple puncture with the trocar, or lancet. The ancient method of letting out the water, by a small incision, frequently produced it^t; and the seton, the tent, and the cannula, though used for another purpose, or at least for other reasons, were found to be followed by it so often, that they soon were ranked among the means for obtaining a radical cure^u.

^t This was by making, first, an incision of some length through the scrotum and dartos, so as to lay the tunica vaginalis bare, and then by making a puncture in the latter. The accounts given by Brunus and Theodoric, are the same as that of all the writers before them, and have been copied by many since: “Curatio ejus est, ut incidatur cutis testiculorum sectione ampla secundum longitudinem ejus; dein perfora, et aquam extrahe.”

^u Many of the old writers have left us directions for passing the seton, and for introducing the tent, either of lint or sponge; and the cannula, either of alder, or of silver.

Gulielmus e Saliceto, having first proposed the use of external applications, says, “Si hac via non consumitur aqua, tunc perfora bursam, cum phlebotomo tuo acuto, et extrahe aquam, non subito totam, sed partem; et pone in foramine illo tentam lineam, vel stuppeam, aut spongiam; ut posses de die in diem aquam extrahere: et nota, quod hujusmodi ægritudo multoties recidivat; et si sic, semper redeas ad

They were indeed (as I have already observed) originally designed to discharge the water gra-

“ perforationem antedictam: et via ista, et modo, perfecte
“ curabitur.”

Fabritius ab Aquapendente speaks of the tent as frequently used by him in the mixed case of hydrocele and sarcocele, or diseased testicle; though by the account he gives of his success it is pretty clear that he used it in the hydrocele only, or when the testicle was not really diseased. His words are, “ Si carnosae simul et aquosae sit hernia, ego talem adhibeo
“ curam. Seco cutem, et incisionem facio exiguam, et in loco
“ potius altiori, quam in fundo; inde, turunda imposita cum
“ digestivo, et pus movente medicamento procedo, neque,
“ unquam totum pus extraho, sed perpetuo bonam partem intus
“ relinquo, quod sensim carnem corrodat, et ita sanat.” An
adhesion of the vaginal coat with the albuginea, may be the consequence of such treatment of an hydrocele, and consequently such patient may obtain a radical cure; but whoever has seen any thing of the disease properly called a sarcocele, will know, that it will very seldom bear such rough treatment.

This method of procuring a firm cure (by the tent) is mentioned by Ruysch: “ Sanari quidem valet id mali pertuso scroto,
“ ope instrumenti touchart dicto, vel lanceola phlebotomica, ut
“ aqua vulnere exeat, sed cito plerumque recrudescit malum.
“ Si autem curationem aggredieris aperiendo scrotum a parte
“ superiori ad latus, tumque vulnus turunda oblonga unguento
“ rosaceo, mercurio precipitato rubro inuncto oppleveris,
“ donec lenis inflammatio, eique succedens suppuratio parva,
“ membranulas stillantes putrefecerit, tuncque eas tenaculo
“ eduxeris,” &c.

Professor Monro, of Edinburgh, has proposed a method of cure upon the same principle; but much better, and more likely to procure the one thing aimed at (the lenis inflammatio), as he employs no cathartic medicines. His words are, “ Considering how readily contiguous inflamed parts grow to-
“ gether; and how many instances there are, of people hav-

dually; and to continue such a drain from the parts where it had been collected, as might

“ing a radical cure made of this hydrocele, by inflammations coming on the part; it would seem no unreasonable practice, to endeavour a concretion of the two coats of the testicle, when they are brought contiguous, after letting out the water through the cannula of a trocar, by artfully raising a sufficient degree of inflammation.

“This to be sure must be done cautiously, and so that the surgeon can reasonably expect to be master of the inflammation; and therefore the application of all irritating medicines, the operation of which he could not immediately stop, or any single mechanical effort, the effect of which he could not be sure of, are not to be employed.

“Suppose the cannula of the trocar was to be left in; by the extremity of it rubbing against the testicle, an inflammation might be artfully raised; the cause of which might be taken away as soon as the surgeon thought fit,” &c.

MEDICAL ESSAYS.

This method, with some small alteration, I have once or twice used with success. Being afraid of the pain which might be caused by the extremity of the cannula rubbing against the tunica albuginea, and the irritation in consequence thereof, I have left it in, but with a piece of bougie (whose length exceeded that of the cannula about a quarter or an eighth of an inch) within it. Of all the methods of using a tent, I think this is the best, as the cannula secures its passage into the cavity of the vaginal coat; which the collapsing of that tunic, and the loose texture of the dartos, would otherwise render somewhat difficult. But although I have once or twice succeeded in this manner, I have much oftener been frustrated: sometimes it has proved absolutely ineffectual; and at others, I have seen it raise such a disturbance, as to render it necessary to lay the whole cavity open before a cure could be obtained.

Of all the methods of obtaining a radical cure of an hydrocele, by exciting inflammation within the tunica vaginalis, and thereby obtaining an adhesion between it and the albuginea,

prevent any of the ill consequences apprehended from the removal of the local disorder: but the inflammation which supervened sometimes, producing a cohesion of the sacculus to the surface of the testicle, what was originally calculated for a palliative remedy only, was by many adopted for a radical one.

If the event, and consequence flowing from these means, were as much in our power as they have been said to be; that is, if we could with any tolerable precision or certainty determine the degree of inflammation to be excited, and the effect of such inflammation on the vaginal coat, there would be no doubt of the utility of them: but this is far from being the case: for although it sometimes is sufficient for the purpose wished for, and rises no higher than just to a degree equal to that purpose, yet it also frequently happens, that either such degree and extent of it is not excited, or it rises much higher, and proves much more painful and fatiguing, than was promised or intended; or (as I have several times seen), after a great deal of pain and confinement, a partial cohesion only has been the consequence, and the disease has still remained, notwithstanding all the patient's and our trouble. Sometimes the pain, inflammation, and symp-

that by the seton is by much the best: it is the least painful, the most easily managed, excites the least troublesome symptoms, and is the most frequently successful; but, as I shall have occasion to speak of this hereafter, I shall defer saying any more concerning it in this place.

tomatic fever are but little; but on the other hand, they are all three sometimes so great as to become alarming, at least to a patient who has been taught to expect a cure upon much more easy terms. The whole scrotum sometimes becomes excessively inflamed; and after a good deal of pain and trouble, large deep sloughs are produced, and the process becomes as irksome as any of those, whose event (with regard to a cure) is much more certain.

If the inflammation be but slight, the pain and tumefaction moderate, the symptomatic fever light, the suppuration small, and an universal cohesion of the two membranes is produced, the event is very fortunate, and a troublesome complaint is thereby got rid of, upon easy terms. If the event prove what I have mentioned in the second place; that is, if either the inflammation be confined to the dartos, where it sometimes produces several superficial abscesses (of no consequence toward the cure of the disease); or if it has been so partial, as only to have occasioned the cohesion between the tunics of small compass, the cavity will not by this means be abolished, nor any thing like a radical cure be obtained; consequently the patient will have undergone all the fatigue, confinement, or pain (be it more or less) for nothing. But if the inflammation rises high, if the scrotum swells considerably, and large deep sloughs are formed (as sometimes happens), the symptoms and the hazard are then fully equal to what attend those more certain methods. Which of the

three will be the event, no man can say. Under the same external appearances, different people are more or less liable to inflammation and fever. The confinement of matter, in consequence of too small an opening, will in some habits make strange havoc, in a very short time; and if a large opening and a plentiful suppuration must at last be submitted to, the method by a large incision at first is preferable, as the cure is more certain, and the loss of time less. Different circumstances in the patient will render one method preferable to, and more likely to succeed than another; but whenever a cure is attempted by any of the before-mentioned means, the uncertainty of the event should be made known, and the patient be apprised of what may happen, either with regard to trouble or disappointment.

All the methods hitherto taken notice of, are calculated to produce a perfect or radical cure, without making a large wound, or bearing the appearance of a chirurgical operation: those of which I am now to speak, are intended for the same purpose; but by making a large and free opening into the bag containing the fluid, to render the accomplishment of such purpose more certain.

These are called the cure by *caustic*, and the cure by *incision*. The cure by caustic is calculated to spare the terror which a cutting instrument always conveys; and (as the patrons of it say) to avoid the painful symptoms, and hazard, which frequently attend a large incision

in these parts. The method is this: a piece of the common paste caustic, rather less than a finger's breadth, properly secured by plaster, is applied the whole length of the anterior part of the tumor, which will necessarily make an eschar of proportional size. When this eschar either casts off, or is divided, an opening of nearly the same length and breadth is thereby intended to be made into the cavity of the tunica vaginalis testis: by which means an opportunity is given to the surgeon to apply such dressings to the inside of the said tunic, as shall, by the generation of new flesh, fill up, and abolish its cavity. The preference which some practitioners have given to this method before that by incision, has been upon a supposition that a circumstance which very seldom happens, will most frequently occur; I mean, the penetration of the caustic through the vaginal tunic, containing the fluid.

By this they hope to avoid the symptoms which are supposed to be generally excited by the division of the said bag by a cutting instrument. I will not say, that the caustic never does this; but I must say, that I have very seldom seen it do so. If the tumor be very large and full, the containing parts be very much on the stress, and the skin and dartos very thin; the caustic may now and then penetrate through, to the vaginal coat: but this, whatever may be thought or pretended, very seldom happens; and when it does not, the tunica vaginalis must be divided in the same state, and manner, as if no

caustic had been applied. All the difference between the two methods (caustic and incision) will then amount to this: that in the former, the skin being mortified, the patient is freed from a part of his apprehension at its being cut; and the surgeon fancying that his escharotic has gone through the vaginal coat, will divide it, as a part of the eschar: but a more careful examination of what he is about, at the time of such operation, would generally convince the latter, that he divides the bag unaltered by the caustic; and the symptoms which often attend this process, confirm it. It has indeed been proposed to divide the eschar made in the skin, down to the surface of the tunica vaginalis, and then, by the application of a fresh caustic, to make an eschar in that coat also. But whoever makes, or submits to this experiment, will find that of two evils he chooses the greater; and to avoid the pain of incision, incurs a much greater degree of it by the repetition of the escharotic. The pain attending the first application of the caustic is indeed to some persons but little; but in many it is fully equal to that of the knife, and must always be of much longer duration. If it does not penetrate the tunica vaginalis, that bag must be divided by a cutting instrument (as I have already said) in the same state as if no caustic had been applied; which incision is and must be accompanied with the same symptoms (in the same person) as in the operation by the knife only. Nor can we at all times confine the caustic, so as that it shall not

cause a much larger sore than is intended, or can be necessary.

Upon the whole, the cure by caustic, as it spares the terror and apprehension of a bloody operation by the knife, and as it requires no dexterity in the operator, may on those two accounts become preferable both to many patients and surgeons; yet whoever promises to perform, or expects to receive, a radical cure by caustic, upon much easier terms than by incision, will most frequently be disappointed; that is, they will frequently find the fever and inflammatory symptoms full as high, and the sore full as painful in the one as in the other; and consequently all their care and attention to obviate mischief, full as necessary. Neither is the accessory confinement, in general, at all less in the one than in the other.

One of the methods made use of by the ancients, to let out the fluid from an hydrocele of the vaginal coat was (as I have already observed), by making a pretty large division of the scrotum and dartos, and having by that means laid the tunic bare, to make an opening into that also, and thereby discharge the contents. This method sometimes produced a perfect cure in the first instance, but much more frequently produced only a temporary relief. If the opening made in the tunica vaginalis was small, and united again immediately, the bag filled again with water, and the disease recurred; but if the orifice, instead of immediately uniting, became inflamed, or sloughy,

such an adhesion of that coat to the albuginea testis sometimes followed, as caused an abolition of the cavity of the former, and consequently a radical cure. Though this happened now and then, and the cure was really accidental, yet it furnished a hint for attempting to attain the same end, with a much greater degree of certainty. This was, by dividing or laying open the whole cavity or bag containing the water: and that, sometimes, by a mere simple divison of it; sometimes, by the total removal of some part of it.

Paulus Ægineta, Albucasis, Severinus, and many others of the best of the ancient writers, have given a particular account of this operation; and it has at all times been practised by some, though it has generally been decried, and dreaded. In what manner, and with what caution it may have been executed, by those who have given so bad an account of it, I know not; but by what I have seen of it, I am very confident that the ills attending it have been much exaggerated; that, under proper cautions and restrictions, it will be found to be practicable with perfect safety; and that it ought by no means to be laid aside. Some writers of very good character have appeared very averse to it, and have ascribed to it such symptoms in general, as are indeed very alarming; but which do not occur, unless the operation be performed improperly, or on subjects unfit for it. I have practised it very often, and do not remember to have seen any ill effects from it, more than two

or three times. I would be very cautious how I advanced any thing in a matter of this kind, which experience would not vindicate, or by which others might be misled; but I have so often made the experiment, and with such success, that I cannot hesitate to assert, that under the necessary restraints, regarding age, habit, state of the disease, &c. it is a very useful operation, and may be practised with great propriety. I may, perhaps, be thought to speak better of it than it deserves: I am not conscious that I do; but I am much inclined to believe, that they, who appear so averse to it, have either practised it on improper subjects, and improper circumstances, or, having imbibed a prejudice against it, have been unnecessarily alarmed at what would not in other cases have alarmed them; or, that not being sufficiently apprehensive and attentive, they have suffered their patients to get into circumstances of hazard, which are not justly chargeable on the operation merely, and would not happen under more careful management.

Advanced age, an apparently bad or cachectic habit, a disposition to anasarca or leucophlegmatic swellings, an intemperate life, the custom of drinking spirituous liquors, and any such general disorder in the constitution as is likely to increase the symptomatic fever, which such an operation must necessarily produce, are just objections to it: any disease of the glandular part of the testicle, its coats or vessels, an old irreducible hernia, a diseased state of the urethra,

prostrate gland, or neck of the bladder, are (while they continue) good reasons for not performing it: but, *consideratis considerandis*, in young and healthy people, and in a recent state of the disease, this method of obtaining a radical cure is a very good and a very practicable one.

The method of performing the operation is as follows: Having appointed an assistant to grasp the upper part of the tumor, in order to render it tense below, a puncture should be made in the lower and anterior part, through the skin and vaginal coat. If the operator intends to finish the incision with a knife, he should make this puncture large enough to admit the end of his fore-finger; which he should introduce immediately, before the water is all discharged, and the vaginal coat collapsed; and upon that finger so introduced, he should continue his division of the whole length of the bag, and of the scrotum which covers it. If he intends to use the probe-scissors (a more tedious and a more painful method), he may make his first puncture with a lancet, and then introduce his scissors. Upon the first division, the water rushes out, and the tumor subsides: if the puncture be made small, a part of the fluid will insinuate itself into the cells of the dartos, and by the immediate collapsion of the vaginal coat, the operator will find some difficulty in introducing either his finger or his instrument into the orifice made in it; if he does not do this, he will divide only the skin and the dartos, and the

patient must undergo a second incision, for the division of the cyst: all which inconvenience may be avoided, by making the first opening large enough for the introduction of the finger; and when that is in, all the rest is, upon that, very easily executed*.

When the vaginal tunic is divided, and the fluid thereby discharged, the testicle, covered only by its tunica albuginea, comes into view; and if the incision was either begun, or continued very low, it generally thrusts itself out from the wound. This should be gently replaced; and if the vaginal coat is not much thickened by having been long distended, nothing more need be done, than to lay a small quantity of fine lint^y into its cavity; and then covering the wound with a large pledget and a soft bolster, tie the scrotum up in a suspensory bag. This operation, if properly performed, may be executed in a very few seconds: it requires no other violence, than the mere division of the

* Some practitioners, terrified at the accounts which they have received of the operation, and yet being desirous of producing a radical cure in this manner, have thought that they might lessen the hazard, by reducing the size of the incision; and therefore make a very small one: but whoever depends upon this, will find himself mistaken. An incision made one fourth of the length of the sac will be attended with all the trouble and hazard, which follow one of two thirds; with this additional inconvenience, that the former will very often prove ineffectual at last.

^y By no means to fill, or distend it, or to make any pressure on the testicle; whose tunica albuginea is very irritable, as well as acutely sensible.

parts; and if this division be made with a knife, rather than scissors, it will require much less time, and cause much less pain.

The membranous structure of the parts on which this wound is inflicted; their continuation from the peritoneum; and the great irritability of some of those which are necessarily laid bare, and put under a necessity of receiving dressings, must occasion pain and symptomatic fever. This it is the business of art to moderate and relieve: phlebotomy, lenient aperitives, febrifuges, and opiates, will therefore become necessary. But in this case, as in many others, it will generally be found much more easy to prevent bad symptoms than to remove them, when they have been permitted to attain a considerable height. The operation is, or ought to be, confined to the young and the healthy, in whom inflammatory symptoms are most likely to occur; but (I believe I may venture to say) to whom we have more efficacious remedies to apply *in* such disorders, than can be used to people of a different habit, and in different circumstances.

The general induration of all the parts about, the thick tumid lips of the incision, and the general inflammatory enlargement of the scrotum, have for the first four or five days a disagreeable appearance; and may, if neglected or mis-treated, prove very troublesome or even hazardous; and the kind of discharge, which during that time is made (a thin discoloured gleet), seems very unequal to the reduction of

so much tumefaction; but when the febrile symptoms are appeased, and a kindly suppuration begun, let the surgeon have patience, and not by an over-officiousness, or by improper dressings, interrupt Nature in what she is about: let him, by warm fomentations, keep the parts clean and perspirable; let him dress the wound with a small quantity of soft, easy, digestive applications; and covering the whole scrotum² with a soft, warm poultice, suspend it in a proper bag; and he will, in general, soon see a favourable change in all the appearances: he will see the inflammation disappear, the tumor resolve, and all the tumefaction in due time subside. But if he neglects these general cautions, and under a notion of assisting digestion, goes to work with precipitate and other irritating dressings, the face of things will not be so agreeable; the tumor will not subside; and he will continue, or rather create, a painful, undigested sore, with all its consequences; but, for which, he only is accountable³.

² The impalpable farina seminis lini, put into boiling water, with a proper quantity of ung. sambuc., fresh butter, or lard, is the easiest made, and is the neatest, softest, smoothest, and most relaxing application of the kind; has nothing offensive in its flavour; nor is it, like most other cataplasms, likely to excite a herpes.

³ The great hardness which almost always attends inflammations of these parts, has (I suppose) been the reason, why so many writers have advised, and so many practitioners still use such applications, as (though really escharotics) are called dissolvers of induration, and removers of obstruction.

I would be very cautious, how I made objection to what so

In about six weeks, the scrotum is generally reduced to nearly its natural size; and when

many have recommended; and, in a matter of mere speculation, would rather doubt my own judgment, than that of some others: but this is a fact, of which I have too often been convinced to be mistaken; and, therefore, I cannot help saying, that it appears to me, that all applications of this kind, even in the mildest of them (the red precipitate), are generally very improperly used; that they give unnecessary pain; and retard, what they are used with design to expedite.

Inflammatory hardness and tumefaction is not peculiar to the scrotum, upon its being wounded: it is common to all parts of similar structure; that is, the adipose and cellular membrane all over the body.

When such parts are irritated by a large wound, they cannot resist a sudden influx; the consequence of which must, for a time, be obstruction, induration, and swelling: but one moment's reflexion on the natural structure and state of these parts, before such wound was inflicted, or such irritation excited, will prove that ease, relaxation, and free suppuration, must be the intentions proper to be pursued; and that every application, which either stimulates, gives pain, or corrodes, must pervert and counteract such intentions.

The breasts of women, the axillæ of both sexes, the parts surrounding the intestinum rectum, the cellular membrane in the perinæum, under the integuments of the penis, and in several other parts of the body, are liable to this kind of alteration, when injured; but this induration is very unlike to a glandular one, and requires very different treatment. In the latter, a destruction of parts is sometimes necessary, and escharotic medicines may therefore be required. But in the former, mere relaxation is all that is wanted: whatever gives ease, and appeases the inflammatory tension, will best produce matter, and answer the purpose which ought to be aimed at.

The most convincing proof of the truth of this doctrine, may be drawn from that case, which, of all those which affect this kind of membrane, is generally the most troublesome; I mean the fistulæ in perinæo. In these the induration and

the wound is quite healed, the cicatrix is a mere line, correspondent to the original incision;

enlargement of the parts is sometimes so great, as to be very alarming; hard callous excrescences; deep and long sinuses, with small orifices; constant pain and irritation, from the lodgment of matter and urine; a symptomatic fever of the hectic kind; and a difficulty either of retaining the urine within, or expelling it from the bladder, make a part of the most frequent characteristics of this disease: and yet, even these cases, terrible as they are, do frequently admit relief, and are sometimes even cured, without any destruction of parts, or the use of any one escharotic application: a free division of all the hollow and hard parts; the application of soft, easy digestives, and of a warm, relaxing poultice; a total abstinence from all such external remedies, as corrode or irritate; and all such internal ones, as under the title of deobstruents, increase the velocity of the circulation, and waste the patient's strength, by watching, purging, and sweating; and an easy and gradual distention of the urethra, by a simple *unmedicated* bougie; will, in some instances (indeed, in all, where any good can be done at all), remove most of these disagreeable circumstances and appearances: in which cases, a kindly suppuration will be afforded by all the divided parts; a florid, well-conditioned incarnation will be the consequence; the cicatrix will be small, soft, and moveable, and very unlike to what must follow from the use of cathartic applications.

This is really a matter of much greater general importance, than it is supposed to be: the symptomatic fevers, which are either produced or maintained by the injudicious application of painful dressing, are much more frequent than they are thought to be: not to mention the loss of time which they must always cause, and the very disagreeable deformities they often occasion.

The surgery of most of our forefathers was coarse and rough; and many of the practitioners affected a kind of brutal, unfeeling rusticity. The old maxim, "*Dolor medicina doloris*," was so generally received, that the surgeon almost forgot his patient's sensation; and the common people thought they were neglected, if they were not tortured. Lord Bacon's most excellent

which is a circumstance of more consequence to the patient than is imagined; especially if he be obliged to get his bread by labour.

advice, "*Inveniend umquid natura ferat aut faciat*," was but half remembered; they tried very sufficiently what Nature would bear, but very seldom had patience to know what she could do. Under a mistaken notion of going to the bottom of wounds and abscesses, and of dissolving indurations, they crammed and distended the cavities, and corroded and irritated their sides, till a train of bad symptoms were often excited, which the original disease had no share in the production of.

That this is no exaggeration, let their works testify; and that something of this kind is still too much in use, is too well known. All dressings are in fact-extraneous bodies; and when they either consist of such materials as give pain, and excite irritation, or are crammed in with injudicious violence, they are foreign bodies, with other mischievous qualities annexed. Where destruction of parts is necessary, the sooner it is executed the better, and the necessary pain must be complied with; but in the application of dressings to the inside of abscesses, to hollows made by the removal of diseased parts, to large sores attended with hardness and inflammation of the common membrane: in short, wherever mere suppuration is required, they cannot be too light, soft, and easy: all that we have to do, is not to obstruct Nature in the execution of those offices, to which she is generally fully equal; in which we can lend her no assistance beyond removing impediments out of her way. In the particular case of the divided tunica vaginalis, that degree of thickness and hardness, which it sometimes acquires by long distention, is urged as a reason for the use of caustic applications: but this is a method of reasoning to which I cannot agree, having often experienced the contrary. That membrane, like all others of the exanguious kind, is difficult and slow of digestion, especially if altered by disease; but that it will in time become sloughy, digest, and yield a kindly suppuration and incarnation, by the mere use of simple, easy applications, and without that of any escharotic (not even the red precipitate) I have often and often experienced.

If the tunica vaginalis, containing the water, by long or frequent distention, or from any other cause, is become thick and hard, and cannot therefore contract itself, or be contracted, upon the evacuation of the fluid; it will contribute considerably to the thickness of the lips of the wound, as well as to their hardness, pain, and difficulty of digestion. In this case, the best way is to remove a part of it, on each side, at the time of the operation. The cellular structure of the dartos easily admits this to be done; and when these sides are thus taken away, the lips of the wound consist only of the common integuments. A knife will do this with much more ease and expedition than any other instrument whatever. The method proposed by the late Mr. Douglas, of doing it by repeated snips of the probe-scissors, is operose, unhandy, and unnecessarily painful and tedious: nor is the cutting away an oval piece of the scrotum, as advised by that gentleman and some others, at all necessary: on the contrary, the more loose that part of the scrotum is, which is to cover the testicle (now deprived of its vaginal coat), the better; as it will be more capable of corrugation.

With these cautions, and under the proper restrictions already mentioned, this method of obtaining a radical cure is very practicable. That it is sometimes accompanied by troublesome symptoms, is beyond all doubt; and so is the method by caustic. I cannot say, that I have never seen it prove fatal; nor can that be said

of any operation of consequence. Much depends on the choice of a proper subject, and the observance of the necessary means and cautions; without which, both this, and the use of the caustic, will always be troublesome, and sometimes hazardous.

Before I finish the account of this method of cure, I would take the liberty of mentioning one circumstance more, which appears to me to be of consequence. When the quantity of fluid is large, and the scrotum and tunic much on the stretch, I think it is better to discharge the water by mere puncture; and not to perform the operation for the radical cure, until a fresh accumulation has again moderately distended it. The inflammation necessarily consequent upon the division of these parts, just after they have been so much on the stretch, and so suddenly let loose, may be (and I think I might say, that I have seen it prove) productive of worse symptoms, and a higher degree of fever and tumefaction, than usually occurs when the same parts are divided in a less distended state.

This method of obtaining a radical cure by incision, of which I have given the fairest and most impartial account in my power, must always be considered as a matter of choice, and never can be an operation of necessity; that is, they who are afflicted with the disease, for whose cure it is calculated, will always have it in their power to be temporarily relieved by the palliative means, or may make trial of any of the above-mentioned less certain attempts,

without incurring any, or a very small degree of hazard. Now as this method can never be said to be totally and absolutely void of some danger; as it bears the appearance of an operation of some severity; and as it must always be voluntarily and deliberately submitted to, without any real necessity from the circumstances of the disease; in other words, as it must be chosen by the patient, merely to avoid the trouble and inconveniences attending the disorder, and not necessarily applied to, as some other operations are, to save or preserve life, it does not often happen that we are called upon to practise it^b.

The number of people labouring under this disease, and who come within the above-mentioned

^b The method of cure of the hydrocele by incision, which Mr. Pott has here so fully described, he did not perform during the last twenty years of his life; on the contrary, in every conversation, public and private, represented it as a severe and unnecessary operation; during which time it has not been performed at St. Bartholomew's hospital. Before that period it was the usual practice.

As this disease has of late been the subject of so much disquisition, and so many improvements have taken place in the treatment of it, I had entertained hopes that the operations by incision and excision, would have been wholly laid aside, as I must confess they always appeared to me painful in the execution, and productive of great and dangerous inflammation, often causing a fever which put the life of the patient in considerable hazard. Mr. Chesselden, who was by no means a timid operator, speaking of the cure of the hydrocele by incision, says, "This I have done, and seen done several times; but never thought the cure worth the trouble and pain the patient underwent." E.

necessary restraints, from age, habit, manner of living, date of the complaint, thickness of sac, &c. &c. &c. is great. And that of those, who either have an insuperable dread of an operation, or are so circumstanced or connected in life, as to make any such degree of danger highly improper to be voluntarily incurred, is still greater: so that by far the majority of those who are afflicted with the disorder, are obliged (however irksome it may be, or however disagreeable it may prove to them) to carry it through their life, seeking relief now and then from the palliative remedy of tapping. This renders it, to the active and to the laborious, a complaint of more consequence than is generally imagined.

From these considerations, I have often been induced to think seriously on the subject, and to make many experiments; the result of which, when likely to prove at all useful to mankind, or creditable to the art of surgery, I shall always think myself obliged to communicate.

Every practicable method proposed by the ancients, I have tried; and have found them in general painful, fatiguing, hazardous, or inefficacious.

The tent, whether of lint or sponge, is subject to great objections, both in its first application, and its future necessary continuance. The cellular structure of the dartos, and the loose connexion between the skin and tunica vaginalis, renders its introduction (unless a cannula be used) sometimes difficult. When in, great care must be taken to keep it there for some time, or the

effect intended (an inflammation of the vaginal coat and albuginea) cannot be obtained; and the means made use of for its distention, as well as the nature of the tent itself (especially if made of sponge) prove frequently very fatiguing, not to say mischievous, by the irritation and the necessary confinement of the matter. And, after all, I have several times seen it produce only a partial cohesion; and that so small an one, as to prove no cure at all, nor at all prevent the future accumulation of water, or the necessity of frequent tapping.

The cannula, when used for the same purpose instead of a tent, is indeed easily introduced; and when in, does not confine the matter: but then its hardness, inflexibility, and thin edge, and the absolute impossibility of directing or managing it in the frequent and necessary motions of the patient, though confined to his bed, render it a very unpleasant and troublesome guest within the tunica vaginalis; and if to avoid this inconvenience, a piece of bougie be kept within it, this, while it is there, confines what ought to be discharged.

The point to be aimed at is, to excite such a degree of inflammation, both in the tunica vaginalis and tunica albuginea, as shall occasion a general and perfect cohesion between them: and this, if possible, without the production of slough or abscess; without the hazard of gangrene; and without that degree of symptomatic fever which now and then attends both the caustic and the incision; and which, when

it does happen, is so alarming both to patient and surgeon.

These ends I have frequently obtained, by the use of a seton. It is a method of cure mentioned by Aquapendens, as used by Guido, and others before him (though their process was somewhat different from mine). I have several times tried it on subjects of very different ages, some of them more than fifty years old. It requires confinement to bed only for a few days; after which, the patient may lay on a couch to the end of the attendance; which is generally finished in about three weeks, or a month at the furthest: and, during all that time, no other process or regimen is necessary, than what an inflammation of the same part from any other cause (for example, a hernia humoralis) would require. But for a more particular account of this I must refer the reader to the tract on this subject, which he will find at the end of the present.

S E C T. IX.

THE HÆMATOCELE, OR TUMOR FROM BLOOD.

THIS is a swelling of the scrotum, or of the spermatic process, proceeding from, or caused by blood; and though spoken of by writers as one simple disease, is liable to so considerable variety, both with regard to nature and situation,

as to admit, or even require, being divided into several kinds.

Such distinction of the different kinds of hæmatocele, though not usually made, is absolutely necessary toward rightly understanding the disease; the general idea or conception of which, appears to me to be somewhat erroneous, and to have produced a prognostic which is ill-founded, and hasty. According to my conception and experience in this matter, the disease, properly called hæmatocele, is of four kinds; two of which have their seat within the tunica vaginalis testis; one within the albuginea; and the fourth in the tunica communis, or common cellular membrane, investing the spermatic vessels.

In passing an instrument, in order to let out the water from an hydrocele of the vaginal coat, a vessel is sometimes wounded; which is of such size, as to tinge the fluid pretty deeply at the time of its running out. The orifice becoming close, when the water is all discharged, and a plaster being applied, the blood ceases to flow from thence, but insinuates itself partly into the cavity of the vaginal coat, and partly into the cells of the dartos; making, sometimes, in the space of a few hours, a tumor nearly equal in size to the original hydrocele.—This is one species.

It sometimes happens, in tapping an hydrocele, that although the fluid discharged by that operation be perfectly clear and limpid, yet, in a very short space of time (sometimes

in a few hours) the scrotum becomes as large as it was before, and palpably as full of a fluid. If a new puncture be now made, the discharge instead of being limpid (as before) is now either pure blood, or very bloody.—This is another species: but, like the preceding, confined to the tunica vaginalis.

The whole vascular compages of the testicle is sometimes very much enlarged, and at the same time rendered so lax and loose, that the tumor produced thereby has, to the fingers of an examiner, very much the appearance of a swelling composed of a mere fluid, supposed to be somewhat thick or viscid. This is in some measure a deception; but not totally so: the greater part of the tumefaction is caused by the loosened texture of the testis; but there is very frequently a quantity of extravasated blood also.

If this be supposed to be an hydrocele, and pierced, the discharge will be mere blood. This is a third kind of hæmatocele; and very different, in all its circumstances, from the two preceding: the fluid is shed from the vessels of the glandular part of the testicle, and contained within the tunica albuginea.

The fourth consists in a rupture of, and an effusion of blood from, a branch of the spermatic vein, in its passage from the groin to the testicle. In which case, the extravasation is made into the tunica communis, or cellular membrane investing the spermatic vessels.

Each of these four I have seen so distinctly

and perfectly, that I have not the smallest doubt concerning their existence, and of their difference from each other.

The tunica vaginalis testis, in a natural and healthy state, is a membrane, which, although firm, is of no great thickness; it is white, or rather of a reddish white colour; and its blood-vessels are (in a healthy state) no more apparent to the eye, than are those of the tunica albuginea: but when it has been long or much distended, it thereby becomes thick, and tough; and the vessels (especially those of its inner surface) are sometimes so large, as to be very visible, and even varicous. If one of these lies in the way of the instrument, wherewith the palliative cure is performed, it is sometimes wounded: in which case, as I have already observed, the first part of the serum which is discharged, is pretty deeply tinged with blood.

Upon the collapsion of the membranes, and of the empty bag, this kind of hæmorrhage generally ceases, and nothing more comes of it. But it sometimes happens, either from the toughness of the tunic, or from the varicous state of the vessel, that the wound (especially if made by a lancet) does not immediately unite; but continues to discharge blood into the cavity of the said tunic, thereby producing a new tumor, and a fresh necessity of operation.

This is what I have taken the liberty to call the first species of hæmatocele, and plainly

and evidently consists in a wound of a vessel of the vaginal tunic.

Upon the sudden discharge of the fluid, from the bag of an over-stretched hydrocele, and thereby removing all counter-pressure against the sides of the vessels, some of which are become varicous, one of them will, sometimes, without having been wounded, burst. If the quantity of blood shed from the vessel so burst be small, it is soon absorbed again, and, creating no trouble, the thing is not known^c. But if the quantity be considerable, it, like the preceding, occasions a new tumor, and calls for a repetition of the operation. This I call the second species: which, like the first, belongs entirely to the vaginal coat, and has no concern either with the testicle, or with the spermatic vessels. In both, the bag which was full of water, becomes in a short space of time distended with blood; which blood, if not carried off by absorption, must be discharged by opening the containing cyst: but in neither of these can castration (though said to be the only remedy) be ever necessary: the mere

^c From this cause it very often happens, that the last running (if I may use the phrase) of the water from an hydrocele, is bloody (all the former part having been perfectly clear); and from hence it is, that a bloody discharge may almost always be produced upon the same occasion, by pressing and handling the scrotum. They who would see a very ingenious account of this kind of hæmatocele, and a very probable application of the same principle, for the solution of some other appearances in diseases, may find it in the *Edinburgh Essays* from Professor Monro, the father.

division of the *sacculus*^d, and the application of dry lint to its inside, will, in general, if not always, restrain the hæmorrhage, and answer every purpose, for which so severe a remedy has been prescribed. The other two are indeed of more consequence: they interest either the testicle itself, or the vessels by which it is supplied with blood, and rendered capable of executing its office; and are sometimes not curable, but by removal of the part.

One of these is seated within the *tunica albuginea* of the testicle; the other in the *tunica communis* of its vessels: they are neither of

^d It may indeed happen, that the blood of the patient may be in such state, as to be incapable of coagulation: in which case, the hæmorrhage will continue from the inside of the sac, although it be laid open; and also from all the divided parts. This circumstance, though a very hazardous one, cannot be foreseen; nor do I know, in this state of the juices, what benefit can arise from the removal of the testicle; for the hæmorrhage will certainly be continued, from all parts of the wound necessary in such operation, upon the same principle, and for the same reason that it could not be restrained from the inside of the sac. Such an indisposition of blood is often, in cachectic habits, the cause of very troublesome and fatal hæmorrhages, at some distance of time from amputation, as well as immediately. If this want of an agglutinant quality in the blood is not corrected, or is not capable of correction, it generally goes hard with the patient, let the operation be what or where it may: for it is not merely the suppression of the bleeding that is required; the same ill quality of blood will prevent suppuration, produce bloody, sanious gleet, gangrene, and mortification. This is an evil, of which every practitioner must have seen so many instances, that it is needless to produce particular ones.

them very frequent; but when they do happen, they call for all our attention.

If blood be extravasated within the tunica albuginea, or proper coat of the testicle, in consequence of a great relaxation, and (as it were) dissolution of part of the vascular compages of that gland, and the quantity be considerable, it will afford or produce a fluctuation, to the hand of an examiner, very like to that of an hydrocele of the tunica vaginalis; allowing something for the different density of the different fluids, and the greater depth of the former from the surface.

If this be mistaken for a simple hydrocele, and an opening be made, the discharge will be blood; not fluid, or very thin; not like to blood circulating through its proper vessels; but dark, and dusky in colour, and nearly of the consistence of thin chocolate (like to what is most frequently found in the imperforate vagina). The quantity discharged will be much smaller than was expected from the size of the tumor; which size will not be considerably diminished. When this small quantity of blood has been so drawn off, the testicle will, upon examination, be found to be much larger than it ought to be; as well as much more loose and flabby: instead of that roundness and resistance arising from an healthy state of the gland, within its firm strong coat: it is soft, and capable of being compressed almost flat, and that generally without any of that pain and uneasiness, which always attend

the compression of a sound testicle. If the bleeding ceases upon the withdrawing the cannula (supposing a trocar to have been used) and the puncture closes, a fresh accumulation of the same kind of fluid is soon made, and the same degree of tumefaction is produced, as before the operation: if the orifice does not close, the hæmorrhage continues, and very soon becomes alarming.

In the two preceding species, the blood comes from the tunica vaginalis, the testis itself being safe and unconcerned; and the remedy is found, by opening the cavity of the said tunic: but in this, the hæmorrhage comes from the substance of the testicle; from the convolutions of the spermatic artery, within the tunica albuginea. The division of the vaginal coat can here do no good; and an incision made into the albuginea can only increase the mischief: the testicle is spoiled, or rendered useless, by that kind of alteration made in it, previous to the extravasation; and castration is the only cure, which a patient in such circumstances can depend upon.

The last species of this disease arises from a bursting of a branch of the spermatic vein, between the groin and scrotum, in what is generally known by the name of the spermatic process. This, which is generally produced by great or sudden exertions of strength, feats of agility, &c. may happen to persons in the best health, whose blood and juices are in the best order, and whose genital parts are free from blemish or disease.

The effusion, or extravasation, is made into the cellular membrane, which invests and envelops the spermatic vessels, and has something the appearance of a true hernia. When the case is clear, and the extravasated blood does not give way to discutient applications, the only remedy is to lay the tumor fairly open, through its whole length. If the vessel or breach be small, the hæmorrhage may be restrained by mere compression with dry lint, or by the use of styptics; but if it be large, and these means do not succeed, the ligature must be made use of. If the bleeding branch can be tied singly, the testicle may be preserved; if it cannot, and the whole spermatic process must be included, it is unnecessary to add, that the testicle must be removed.

CASE XXV.

A HEALTHY man, about thirty years old, desired me to let out the water from an hydrocele; which operation, he said, had, for some time past, been performed upon him, twice a year, by the late Mr. Bell, of Red-lion-square; and he desired also, that I would do it with a lancet. I let out near a pint, the first part of which was deeply tinged with blood; but as it ran, it became clearer and clearer, and at last was perfectly limpid; and when I put on the plaster, he did not bleed a drop. The next morning, he came to me again; told me that he had bled a good deal in the night;

and showed me his linen, which was very bloody. As there was no discharge at this time, I only renewed his plaster, put him a bag-truss on, and desired that he would go home, and keep quiet. He remained free from hæmorrhage for some hours, and therefore neglecting my last caution, he walked about a good deal, and heated himself, and the next day sent for me to look at his scrotum, which was large and full. Making no doubt, from all the circumstances, that the tumefaction was from blood, I told him my opinion; and at the same time advised, if it did not dissipate by proper attempts for that purpose, to submit to have the vaginal coat laid open, and thereby obtain a radical cure.

Some time was spent in attempting discussion; during which the tumor increased, and he now and then bled pretty freely from the orifice, which became spongy, and would not heal.

Finding all endeavours ineffectual, he submitted: the tunica vaginalis was laid open; a considerable quantity of blood was discharged (some in a fluid state, but principally grumous); he had no disagreeable symptoms; and, in about six weeks, was perfectly well.

CASE XXVI.

AN elderly man, who had often had a large hydrocele tapped at the hospital, came one day, as usual: I made a puncture with a lancet, and let out the water; but was near half an

hour before I could stop an hæmorrhage from the wound.

The next day he came again, and complained to one of my dressers, that he had bled, more or less, all the night. He was properly dressed; the bleeding restrained; and he was advised to go home, and keep quiet upon the bed.

The third day, when I was again at the hospital, he came and showed me his scrotum; which was as full, and as large, as when I first tapped it: the orifice was not healed; and, upon pressure, blood was discharged from it. He said, that he could not afford to rest from his labour; and my week for accidents being expired, Mr. Crane took him under his care.

He (finding the bloody discharge still continued, notwithstanding the man kept in bed, and was properly taken care of) made a free incision into the tumor; turned out a good deal of coagulated blood with his finger; and then, lightly filling the cavity with lint, obtained a suppression of the hæmorrhage, and produced a radical cure.

CASE XXVII.

A GENTLEMAN who used to come to London about every five or six months, to have a large hydrocele emptied, came to me under a great alarm.

Having often had the water drawn off by puncture in London, he determined to let the apothecary of the village where he lived do it

for him, and thereby save him the trouble of a journey. The operation was very properly performed, and the bag perfectly emptied: but the next morning, to his great astonishment, he found it as full as before. His apothecary was as much surprised as himself; and the patient got into a post-chaise, and came immediately to London.

Upon hearing this account, and seeing and feeling the tumor, I made no scruple of declaring it to be bloody; and that if it did not soon dissipate by rest, and proper applications, it must certainly be let out.

All attempts for dispersion proved fruitless, the tumor increased, and as his health and habit were good, and his age by no means advanced, I advised him to submit to an incision; by which I hoped that he would not only get rid of the present evil, but would most probably obtain a radical cure. He complied, upon condition, that I would first by puncture satisfy him, that I was right in my conjecture with regard to the contents.

I passed a lancet into the fore-part, and gave discharge to a clear blood: while that was running out, I made, by means of a probe-pointed knife, an incision of sufficient size, to admit a dossil or two of fine lint. For a day or two, the symptoms were untowardly, and the discharge was large, and bloody; but by proper care, keeping very quiet, and taking freely of the bark with elixir vitrioli, every thing ended well.

CASE XXVIII.

A LUSTY healthy man, about forty, who had the care of a manufacturer's warehouse in my neighbourhood, consulted me on account of a large hydrocele of the tunica vaginalis. The tumor was very large, the parts considerably on the stretch, and I advised him to have it tapped directly.

About twenty ounces of clear water were drawn off by means of a trocar, without the appearance of a drop of blood. As he had carried his burthen long, and had never been relieved from it before, he was much surprised at this immediate ease, and went to work as soon as he got home.

The next morning he came to me much alarmed, and showed me his scrotum; which was full half as big as before the puncture had been made. I had no doubt that its present contents was blood; and was very apprehensive that it might require the same treatment as the preceding case: which, in his constitution, and manner of living, must have been attended with hazard.

I ordered him home to bed immediately, took some blood from his arm, and directed a cooling purge to be taken the next morning; the scrotum was suspended, and wrapped in a rag folded seven or eight times, and wetted in a solution of sal. ammon. crud. in vinegar and water, and he had direction to keep it con-

stantly wet. On the third day I bled him again, and ordered him another purge for the fourth, and continued the same application.

Finding the swelling quite at a stand, and imagining that by mending his state of blood, a further effusion might possibly be prevented, and an opportunity given for the absorption of what was already shed, I advised him to take a dram of the cortex every six hours: this he did for as many days; during which, the tumor visibly lessened: and, by persisting in the same method, he got well: that is, all that degree of tumefaction, which I suppose to have been caused by blood, disappeared. After some months the scrotum became large again; and he followed the advice which I had given him; *viz.* to have the fluid drawn off, before it attained too large a size. I have several times since tapped it, and have always drawn off a clear fluid.

CASE XXIX.

A MAN, about forty-seven, of a sallow complexion, and subject to colicky complaints, had the water drawn off from a hydrocele of the vaginal coat, by means of a small trocar. The quantity was near a pint, and the bag was perfectly emptied. The next morning it seemed to contain a fluid, although in no great quantity: he showed it to the person who tapped him the day before, and who advised him to put on a bag-truss, and to take a smart

purge. In three days it was so manifestly increased, as to alarm the patient, and make him desirous of further advice.

On the sixth day from the first operation, I saw him, and found the scrotum so much enlarged, that I made no doubt the vaginal tunic contained at least seven ounces, which I suspected to be blood.

I advised a discutient application, and the free use of the cortex; but this did not suit the humour, either of the patient or of his surgeon. He took three or four purges of *rad. jalap.* and made use of a warm fomentation. At the end of about a month, I was desired to see him again. The tumor was larger, and his strength impaired by his purging. It appeared to me to be now of such a size, and in such state, that nothing but the operation could serve him; and for which I prepared him, if the puncture should produce a discharge of blood only. An opening was made with a lancet, and the discharge was clear fluid blood: I would have proceeded, but the patient would not permit me: and he was dressed with a superficial pledget, and a plaster.

Blood oozed from the orifice all that night, and part of the next day; and when I saw him again, he could not have lost less than a pint.

I was well aware, what might be the consequence of a division of the tunica vaginalis, in such a habit; but, at the same time, it seemed to be the unicum remedium, for he would take no medicine. The hæmorrhage continuing another day, he submitted. The operation disco-

vered no one bleeding vessel; nor did I imagine that it would, being convinced that it came from the inside of the tunic. He was dressed with dry lint, and put to bed with an opiate. All that night, and the succeeding day, the discharge was large and bloody: and the lips of the incision, on the second, were flabby, and free from inflammatory tumefaction. I told him my opinion freely, and pressed him to take the bark, or have more assistance; both which, at that time, he refused to do.

On the close of the third day, the hæmorrhage still continuing, he becoming sick and faint, and his pulse failing a little, he was alarmed, and permitted us to direct for him. A draught, consisting of a dram of bark, half a dram of confect. cardiac., and three or four drops of tinct. thebaic., was ordered to be taken every four hours.

Not to make the account tedious, by a relation of every minute circumstance, he persisted in this method, and it was four days before the bleeding ceased, or the edges of the incision became inflamed, or showed any tendency toward the suppuration. But at last, with some difficulty, he got well.

CASE XXX.

A LABOURING man, who had fallen down in the street with a load on his back, was brought into St. Bartholomew's hospital, on a suspicion of his having got a rupture, in consequence of

his fall; he having immediately perceived a swelling in his groin and scrotum, which he had not before.

The tumor seemed to occupy the whole spermatic process; which was so enlarged by it, that it was impossible to feel the passage of it from the abdomen, through the muscle: but the testicle below it was perfectly distinct.

The appearance of a tumor, the suddenness of its formation, the distinct situation of the testicle below, and an accidental circumstance of the man's not having had a stool for two days past, inclined Mr. Freke (whose week it was) to believe it to be, and to treat it as, a rupture. He made some attempts for reduction; and, finding them fruitless, determined upon the operation immediately.

He divided the skin and membrana adiposa, down to what he took to be the hernial sac; and when he had so done, had a mind to endeavour at the return of the intestine, without opening the sac.

Mr. Freke was a man not easily to be dissuaded from what he had a mind to do; and having got the whim into his head, was determined to make the experiment on this, which he thought a fair case for the purpose. Accordingly (with his probe-scissors) he divided the tendinous opening in the abdominal muscle; and then again tried to reduce the gut, but to no purpose; for nothing would go up. At last, though with much reluctance, he was obliged to lay open the containing membrane. He had

no sooner done this, than a large quantity of blood, partly fluid, and partly grumous, burst forth, and the whole tumor subsided; leaving the process perfectly free; and containing neither intestine nor omentum.

The parts were now washed clean, and diligent search made for the breach whence this blood issued; but none could be found: the man was dressed with lint and pulv. boli armen. (a method of dressing, which Mr. Freke was fond of) and, in a proper space of time, the man got well without any new hæmorrhage.

In this case, some of the circumstances might be said to render an intestinal hernia not improbable; and the want of stools might have increased such probability: but then, it should have been considered, that although this be one symptom of the strangulated intestine, yet it is not, by any means, an univocal, or infallible one. A want of stools may happen from other causes, even in a person who has a rupture, but cannot singly be a reason for the operation immediately; which ought to be indicated and authorised by other concomitant symptoms and appearances. A costive habit may attend a person, who has an intestinal hernia, when the gut labours under no stricture, and does its office perfectly well in the scrotum; but such patient will not have the symptoms of an incarcerated intestine; nor indeed had this man. His not having been at stool two days before, was an accidental circumstance; which might or might not have been occasioned by the descent of a

piece of the intestinal canal: the truth of which should have been proved by the use of a clyster and a purge, before an operation had been performed.

CASE XXXI.

A YOUNG fellow, straining to get rid of a hard stool, felt a sudden pain in his left groin; and, upon examination, found a swelling, extending from thence into the scrotum. He took it for a rupture, and immediately applied to an advertising operator; who, after several unsuccessful attempts to reduce it, put a truss on him; and told him that the tumor would gradually shrink to nothing. The truss he wore for some days, when, finding both his pain and swelling increase, he applied to a surgeon in his own neighbourhood; with whom I saw him.

The tumor was large, and had somewhat the feel of an omental hernia; the abdominal aperture seemed to be dilated by it; the testicle was tolerably distinct below; his pain in an erect posture was considerable, but in a supine one, very little: he had neither heat, nor quickness of pulse, nor hiccough, nor vomiting; and had been thrice at stool that day.

As there was no reason for supposing any degree of stricture on the intestinal canal, I advised the keeping him in bed, bleeding him freely, and trying what a proper poultice would do.

This method was tried for several days, but without any benefit: on the contrary, the pain increased, as well as the tumor; and a fluctuation within became palpable.

This fluid I thought possibly might be collected in the sac of an omental hernia (a case which I had more than once seen); and as there was plainly enough in quantity to render a puncture perfectly safe, we made one with a lancet, and let out some ounces of clear blood.

When the swelling was thereby lessened, we felt the spermatic vessels, but could discern them very indistinctly; and the process seemed much loaded and enlarged.

Next day the man was perfectly well in health; but the scrotum looked swelled, and black, as if it had been much bruised: he had also bled from the puncture, which was not closed, and discharged blood freely, upon any pressure being made above.

Though we were in some doubt concerning the true nature of the case; yet it was clear, that if the hæmorrhage continued, the part must be laid open.

For three or four days it continued, notwithstanding all our endeavours; and at last it was so considerable, as to indicate the operation immediately.

A knife was introduced into the orifice made by the lancet, and an incision of some length made; but no sacculus, no particular cavity found; nothing like a hernial sac, or tunica vaginalis testis; in short, nothing but cellular

membrane; which satisfied us, that the blood must come from the spermatic chord.

As the bleeding still continued, and was derived from a part above our incision, we continued it quite up to the groin, and found that all the cellular membrane of the process was loaded with extravasated blood; and that it came from a considerable breach now in view. We dressed it with lint, pressed out from a styptic, and intended to have permitted that dressing to have remained on for a day or two: but we were soon sent for on account of an alarming return of the hæmorrhage; which had been so considerable as to produce a swoon.

Castration appeared to us to be the only remedy; and it was immediately performed.

CASE XXXII.

A MIDDLE-AGED man came to St. Bartholomew's hospital, and desired me to look at a swelling in his groin and upper part of the scrotum on the right side; which, he said, came suddenly, by lifting a heavy weight. From the groin quite down to the testicle the spermatic process was enlarged; he had no symptoms of a hernia; and the testis was much too distinct and free for a hydrocele.

While I was examining it, I perceived some blood to drop from the lower part of the swelling; and, upon inquiring the reason, he told me that a puncture had been made in it a day or two before, upon a supposition that the swell-





ing was from water; that it had at intervals bled ever since; but that since it had last stopped, the tumor was increased. From these circumstances, I concluded the swelling to be caused by blood, shed into the tunica communis, from a branch of a varicose spermatic vein.

He submitted to have it laid open: no particular breach was discovered, though the whole membrane was much loaded: the wound was dressed with lint pressed out from spirit. vin. These dressings were suffered to remain on, until they were separated by a beginning suppuration: and by keeping quiet, and being properly taken care of, the man got well, without any return of hæmorrhage.

CASE XXXIII.

A POOR man was brought to my house, by a gentleman of the profession, for my own opinion concerning a tumor of the scrotum.

The swelling was large; of a globular kind of form; painful, not only in general from its weight, but often even when suspended, or when the patient was in bed. It palpably contained a fluid; but the fluctuation of that fluid was not (to my fingers) like the fluctuation of water. In all the posterior part of the tumor, an enlarged, and somewhat hardened testicle might plainly be distinguished; and the general weight of the whole far exceeded that of any hydrocele I had ever met with of equal size. That it was not a mere simple hydrocele I was

very clear: but, whether it was a collection of fluid in the tunica vaginalis of a diseased testicle (what is in general called a hydro-sarcocele), or what other morbid or altered state of parts it might be owing to, I would not pretend to say. A puncture was made in it with a small trocar; and about four ounces of dark-coloured blood, not so fluid as blood generally is while circulating in its proper vessels, was drawn off; a bit of plaster and lint was applied to the orifice, and the man went about his business.

In two days the same surgeon brought the man to me again. The puncture was healed; but the tumor was as large as when I had seen it two days before, and palpably contained the same kind of fluid. What that was we knew: and the consideration was, what was the properest method of giving the man relief. Had he been in good health, I believe I should have advised laying the tumor open; at least so far as to have obtained a more precise knowledge of its nature: but the patient's age and general health were such as would by no means make an operation of that sort an eligible thing. He was near to sixty; asthmatic; had drank freely, and had a yellow countenance, and swelled legs in consequence of it. I advised him to come into the hospital, and try whether, by proper care, his habit might not be mended. Soon after his admission, I had a mind to see whether the contents of the tumor were really the same as before, and made a puncture in it again with the trocar; the discharge was again blood; and it

was two days from this operation, before a bloody discharge from the orifice ceased.

A continuance of dram-drinking brought on a general anasarca, and an extravasation of water in the abdomen; and when he had been in the hospital about two months, he died.

I would not omit the opportunity of examining his scrotal disorder; and found, that the trocar had, at each operation, pierced the tunica albuginea, that the bloody extravasation was within that coat; that the tunica vaginalis was almost universally, though slightly, adherent to the surface of the albuginea; that the vascular compages of the whole testicle was much enlarged, and at the same time so loosened, that a part seemed to have been dissolved into the fluid which produced the fluctuation, which fluid was mere blood; and that the epididymis was hardened, and very considerably enlarged.

I have since had an opportunity of seeing a patient labouring under the same complaint; whose testicle was rather hastily, and inadvertently, laid open; that is, divided. The immediate consequence was a large and obstinate hæmorrhage. Whether it was produced by the division of the substance of the testicle, or by the irritation of such applications as were made use of for stopping the bleeding, I will not pretend to say: but when I saw him, he had a rigid neck; and was what is commonly called jaw-locked. Castration, from the state in which his testicle was when I saw it, must have been the only remedy for his local complaint; but his

spasmodic attack rendered that improper, and every thing else fruitless.

I have also (from a very ingenious practitioner of my acquaintance) received an account of a similar case, in which the testicle was divided, and the hæmorrhage (from the patient's obstinate refusal to submit to the operation of castration) proved at last fatal.

S E C T X.

To the different kinds of hydrocele, which have already been mentioned, some of the modern French writers have added another, *viz.* that which is formed by a collection of fluid in the sac of a true hernia.

The title of this clearly describes its true nature; and therefore I shall only inform the reader of what has fallen within my own knowledge relative to this disease.

C A S E XXXIV.

A YOUNG fellow, about twenty-five years old, applied to me on account of a swelling in his scrotum. It was large, of an irregular figure, not very tense, perfectly indolent, and accompanied with a remarkable fulness of the spermatic process.

The account which he gave of himself was, that he had had a rupture as long as he could

remember; that he had, on that account, worn a steel truss for many years; that, upon taking his truss off, his rupture always came down immediately, and was very easily returned up again; that it had never occasioned any obstruction in his stools, nor given him any pain; that, about a year ago, he had been persuaded to leave his truss off, and to substitute, in its place, a bandage made of dimity, without any iron in it, but which had been buckled on very tight; that, when he had worn this bandage about six months, he found that his rupture was down, and that he could not get it up again; that, upon this, he had applied to the person of whom he bought the bandage; who, after he had ineffectually tried to reduce the rupture, sold him another bandage, and buckling it on still tighter than the first, assured him, that it would never do him any harm; that, from the time of putting on this second, his scrotum had gradually become larger, with considerable pain and uneasiness.

From the feel of all the lower part, I made no doubt that the tumor contained a considerable quantity of fluid; and had there been no other circumstance to influence my judgment, I should have supposed the disease to have been a hydrocele of the tunica vaginalis testis: but the very distinct and particular account which the man gave of himself, and the feel and the appearance of the spermatic process, made me hesitate.

Whatever might be the true nature of the case, a fluid there certainly was; and that in quantity sufficient to render the discharge of it both safe and warrantable. I made a puncture in the middle and anterior part, and let out above a pint of brown serum. This discharge removed all the swelling from below; but made little or no alteration, either in the look or the feel of the upper part of the process. I endeavoured to reduce it; but found it impracticable, and desisted; advising the man to let it alone, to wear no bandage of any kind; and if at any future time it became troublesome to him, I desired that I might see it.

In about a year's time, he came to me again, with his scrotum as big as before, and palpably containing a fluid.

As I had felt the testicle very plainly after the first operation, and as I did not believe the tumor in the process to be formed by the intestine, I advised him to have the whole laid open. He submitted, and I took him into the hospital for that purpose. I made an incision, from the middle and anterior part of the scrotum, quite up to the groin, and found in the lower part of the bag, which contained the fluid, the testicle covered only by its proper coat, or tunica albuginea; and in the upper part, or neck of the same bag, a considerable portion of omentum. The upper part of this portion of caul was hardened in its texture, and so perfectly adherent to every point of the neck of the sac, as to pro-

hibit the return of even a fluid from thence into the belly: but the lower part was in its natural state, loose, soft, and capable of being expanded. All the lower or loose part I cut off, without making a ligature, or being troubled with any hæmorrhage; the upper part I left as I found it; filled the wound lightly with dry lint, and treated the case as I should have done that of the radical cure for an hydrocele. In about seven weeks the man got well, and has ever since remained so.

This man's rupture was of the congenial kind; and therefore the sac of the hernia, and that of the hydrocele, were the same, *viz.* the tunica vaginalis testis.

CASE XXXV.

WHILE the first edition of this book was in the press, Mr. Spray desired me to visit a patient with him, who had some pressing symptoms of a strangulated rupture.

The patient was a healthy young man, about twenty-two years old, and he gave the following account of himself.

That, as long as he could remember, he had been subject to a rupture, which never came lower than his groin, was always easily put up, and had never given him any trouble; that he had, when a child, worn a truss, but, either from its being ill-made, or from his not knowing how to put it on, it had never answered the purpose, and that he had for some years disused it; that,

for a month or two past his rupture had been constantly down; and that, within that space of time, he had never been able to return it, though he had often tried; that still, as it gave him no pain, nor produced any other inconvenience than the mere swelling of the scrotum, he had taken no notice of it, nor applied to any body for assistance until within the last three days; since which, he had been affected with great pain in his belly, a stoppage of stools, and a vomiting.

The lower part of the scrotum was much enlarged, contained a considerable quantity of fluid, and bore very much the appearance of a hydrocele; but the upper part, or spermatic process, was hard and painful, and seemed to be girt tight by the tendon of the abdominal muscle. This, added to an extreme tightness of his belly, want of stool for three days past, anxiety, restlessness, vomiting, and beginning hiccough, determined me to propose the operation immediately.

The lad consented, and I made an incision from the upper part of the tumor, just above the abdominal opening, quite down to the bottom of the scrotum.

Having carefully divided the cutis and common membrane, I came to what appeared to be a hernial sac: this I opened, and thereby let out about half a pint of clear limpid water; upon the discharge of which the whole tumor of the scrotum subsided; and my assistants were convinced, that I had mistaken a hydrocele for a

hernia. But, although the whole of the swelling of the scrotum was entirely dissipated by the discharge, yet the tumor and hardness about the abdominal opening was unaltered, and the patient's pain the same. With a probe-pointed knife, I laid open the whole sac, whence the water had proceeded, quite down to its bottom; and found the naked testicle within it: this gave the disease still more the appearance of a hydrocele, and I began to think that it was so; but, upon passing my finger up to examine the state of the abdominal tendon, I found a small portion of intestine engaged in it, and bound extremely tight. I lengthened the incision, so as to have a fair view of it, and thereby we all became thoroughly satisfied of the true nature of the case. The piece of intestine was small, a good deal darkened in colour, and bound so tightly by the tendon, that it was with great difficulty that I could introduce my finger for the conveyance of the knife. When I had made a sufficient dilatation, I endeavoured to return the gut; but could not execute it, although there was no obstruction from the tendon. I drew out some inches of it, thinking that I might thereby be enabled to make the return more easily: that which I drew out, I replaced with the utmost ease; but could not disengage the small portion which made the original disease. At last, passing my finger round in the dilated opening, I found that the intestine adhered to the lower border of it, by a small membranous

filament; upon the division of which the gut slipped in immediately.

The young man had stools very soon; and, by proper care, very soon got well.

This also was a congenial hernia; the sac which contained the intestine, the fluid, and the testicle, being the tunica vaginalis: but had I been contented with merely dividing the tunic, and had not proceeded in the examination and division of the abdominal tendon, the lad would have been destroyed by the stricture.

SECT. XI.

THE rest of the false herniæ (as they are called) are the pneumatocele, the varicocele, the cirsocele, and the sarcocele; to which, some have added the hydro-sarcocele.

The first of these is (as I have already said) a mistake: there is no hernia produced by mere wind. The two diseases, which, in new-born children and infants, are taken for and called wind-ruptures, are, a tumor produced by a small quantity of fluid remaining in the lower part of the tunica vaginalis, after its communication above with the cavity of the belly is closed; and a true (but small) intestinal hernia.

The varicocele is a dilatation of the blood-vessels of the scrotum. These are of different

size, in different people; and, like the vessels in other parts of the body, are liable to become varicose; but are seldom so much enlarged as to be troublesome, unless such enlargement is the consequence of a disease, either of the testicle, or of the spermatic chord. When this is the case, the original disease is what engages our attention, and not this simple effect of it; and therefore, considered abstractedly, the varicocele is a disease of no importance.

The cirsocele is a varicose distention and enlargement of the spermatic vein; and, whether considered on account of the pain which it sometimes occasions, or on account of a wasting of the testicle, which now and then follows it, may truly be called a disease. It is frequently mistaken for a descent of a small portion of omentum. The uneasiness which it occasions is a dull kind of pain in the back, generally relieved by suspension of the scrotum. It has been supposed to resemble a collection of earth-worms; but whoever has an idea of a varicose vessel, will not stand in need of an illustration by comparison. It is most frequently confined to that part of the spermatic process which is below the opening in the abdominal tendon; and the vessels generally become rather larger, as they approach nearer to the testis. In books are to be found prescriptions for lessening the distended veins; but I cannot say that I ever saw any good effect from external applications of any kind.

In general, the testicle is perfectly unconcerned in and affected by this disease; but some-

times it happens, that it makes its appearance very suddenly, and with acute pain, requiring rest and ease ; and sometimes, after such symptoms have been removed, I have seen the testicle so wasted, as hardly to be discernible.

CASE XXXVI.

A YOUNG fellow, on a journey, found himself one evening more than ordinarily tired ; and, as soon as he got to bed, was seized with a violent pain in his back, which (to use his own words) shot down into his stone.

The pain was so great, as to oblige him to send for somebody immediately, who bled him freely : this produced no relief, nor was the pain yet attended with any tumor of the scrotum, or testicle ; or by any appearance whatever of the parts affected. The pain continued, without remission, all the next day : he was again let blood, had a clyster, and a gentle purge. On the third day, toward evening, the pain totally left him, and a fulness appeared in the groin, tending down toward the testicle : this made him so uneasy, that, finding the apothecary, who had the care of him, did not seem clearly to know what it was, he got into a post-chaise, and came home to London.

His journey brought on a return of pain : but by losing some more blood, keeping in bed, applying an emollient poultice to the groin, and suspending the parts in a bag-truss, he became easy, and all the tumefaction dispersed ; except

a small fulness of the spermatic chord, occasioned by the varicose state of its vessels. But the testicle was so diminished, as to be hardly perceptible; and remains so, to the time of my writing this.

CASE XXXVII.

AN ostler, at an inn in Smithfield, was, by the fall of a horse, thrown over his head, and his groin struck against the pommel of the saddle. It gave him exquisite pain; and he was brought immediately to the hospital, upon a supposition that he had burst himself.

Upon examination, no swelling appeared, either of the testicle or of the spermatic chord; but the pain (which he said was exquisite) was confined to that part of the latter, which is between the testicle and the groin.

He was largely blooded, had a clyster, and a purge: his pain continued two days; and, when it left him, the spermatic vessels became greatly varicose. No application, which was made use of on this account, proved at all beneficial; that is, rendered the distended vessels at all less; and, when he left the hospital, he was perfectly free from pain: but his testicle, on that side, was scarce discernible.

I once saw the same effect, from the injudicious application of a truss, on a true circocoele: the vessels, by means of the pressure, became enlarged to a prodigious size, but the testicle shrunk to almost nothing.

CASE XXXVIII.

A YOUNG gentleman about twenty-five years old, after having heated himself much with exercise, went too soon into a river to bathe. In the middle of the ensuing night, he was seized with a coldness and shivering; which were followed with great heat and thirst, and a slight sweat. He sent for a surgeon, who bled him and gave him a clyster, bid him keep in bed, and drink plentifully. Next day, he gave him a laxative medicine, and some febrifuge draughts.

For three days, his fever was unremitting; but on the fourth he became cooler, and was seized with a most acute pain in his loins; for which he was again bled and purged. On the fifth day, his back became easy; but both testicles, though very little swollen, were so tender, as hardly to admit the touch; and, in a very few hours, the spermatic vessels were so distended, as to make an apparent tumor. By means of fomentation, poultice, and rest, all uneasiness was removed in about a fortnight; but, at the end of that time, both patient and surgeon were excessively astonished, at not being able to find the testicles. The latter came to London immediately, and desired me to examine him, after having given me the preceding account.

The spermatic vessels were full, and varicose; the vasa deferentia too large, and rather too hard; as were also the epididymes: but there

was not, on either side, the least appearance of a natural testicle. A flattened, compressed kind of membranous substance (which, I suppose, was the tunica albuginea) seemed to hang from each epididymis; but there was not any trace or vestige of the glandular or vascular parts of either testis.

This is the only time I ever saw this complaint on both sides in the same subject.

SECT. XII.

THE SARCOCELE, OR DISEASED TESTICLE.

THIS is a disease of the body of the testicle; and, as the term implies, consists, in general, in such an alteration, made in the structure of it, as produces a resemblance to a hard, fleshy substance, instead of that fine, soft, vascular texture, of which it is in a natural and healthy state composed.

The ancient writers have made a great number of distinctions of the different kinds of this disease, according to its different appearances, and according to the mildness or malignity of the symptoms, with which it may chance to be attended. Thus, the sarcocele, the hydro-sarcocele, the scirrhus, the cancer, the caro adnata ad testem, and the caro adnata ad vasa, which are really little more than descriptions of different states and circumstances of the same disease,

are reckoned as so many different complaints, requiring a variety of treatment, and deriving their origin from a variety of different humours^c.

Every species of sarcocele consists primarily in an enlargement, induration, and obstruction of the vascular part of the testicle; but this alteration is, in different people, attended with such a variety of circumstances, as to produce several different appearances, and to occasion the many distinctions which have been made.

If the body of the testicle, though enlarged and indurated to some degree, be perfectly equal in its surface, void of pain, has no appearance of fluid in its tunica vaginalis, and produces very little uneasiness, except what is occasioned by its mere weight, it is usually called a simple sarcocele, or an indolent scirrhus. If, at the same time that the testis is enlarged and hardened, there be a palpable accumulation of fluid in the vaginal coat, the disease has by many been named a hydro-sarcocele. If the lower part of the spermatic vessels and the epididymis were enlarged, hard, and knotty, they supposed it to be a fungous

^c “Humores crassi sunt duo, pituita et melancholia, e quibus
 “tum scirrhi in aliis partibus, tum indurationes carneæ in
 “testiculis oriuntur. Tumor hic est durus, tactui renitens,
 “indolens, et si exquisitus sit scirrhus, sensu caret. Si a me-
 “lancholia oriatur, color sublividus; si a pituita, colorem cutis
 “non mutat; si a melancholia superassata, dolor punctorius,
 “et inequalis tumor; hic durus, ibi mollis.”

FAB. ab AQUAPENDENTE.

or morbid acretion, and called it the caro adnata ad vasa. If the testicle itself was unequal in its surface, but at the same time not painful, they distinguished it by the title of caro adnata ad testem. If it was tolerably equal, not very painful, nor frequently so, but at the same time hard and large, they gave it the appellation of an occult or benign cancer. If it was ulcerated, subject to frequent acute pain, to hæmorrhage, &c. it was known by that of a malignant or confirmed cancer. These different appearances, though distinguished by different titles, are really no more than so many stages (as it were) of the same kind of disease, and depend a great deal on several accidental circumstances; such as age, habit, manner of living, &c. It is true, that many people pass several years with this disease, under its most favourable appearances, and without encountering any of its worst; but, on the other hand, there are many, who, in a very short space of time, run through all its stages. They who are most conversant with it, know how very convertible its mildest symptoms are into its most dreadful ones; and how very short a space of time often intervenes between the one and the other.

There is hardly any disease, affecting the human body, which is subject to more variety than this is, both with regard to its first manner of appearance, and the changes which it may undergo.

Sometimes the first appearance is a mere simple enlargement and induration of the body of the testicle; void of pain, without inequality of surface, and producing no uneasiness nor inconvenience, except what is occasioned by its mere weight. And some few people are so fortunate to have it remain in this state for a very considerable length of time, without visible or material alteration. On the other hand, it sometimes happens, that very soon after its appearance in this mild manner, it suddenly becomes unequal and knotty, and is attended with very acute pains, darting up to the loins and back; but still remaining entire, that is, not bursting through the integuments. Sometimes the fury of the disease brooks no restraint; but making its way through all the membranes which envelope the testicle, it either produces a large, foul, stinking, phagedenic ulcer with hard edges; or it thrusts forth a painful gleeting fungus, subject to frequent hæmorrhage.

Sometimes (as I have already observed) an accumulation of water is made in the tunica vaginalis, producing that mixed appearance, called the hydro-sarcocele.

Sometimes there is no fluid at all in the cavity of the tunica vaginalis; but the body of the testicle itself is formed into cells, containing either a turbid kind of water, a bloody sanies, or a purulent, fetid matter.

Sometimes the disorder seems to be merely local, that is, confined to the testicle, not pro-

ceeding from a tainted habit, nor accompanied with diseased viscera; the patient having all the general appearances and circumstances of health, and deriving his local mischief from an external injury. At other times, a pallid, leaden countenance, indigestion, frequent nausea, colic pains, sudden purgings, &c. sufficiently indicate a vitiated habit, and diseased viscera; which diseased viscera may also sometimes be discovered and felt.

The progress also which it makes from the testis upward, toward the process, is very uncertain; the disease occupying the testicle only, without affecting the spermatic process, in some subjects, for a great length of time; while in others, it totally spoils the testicle very soon, and almost as soon seizes on the spermatic chord^f.

These, and some other circumstances to be mentioned hereafter, are materially necessary to be observed; as they characterise the disease, point out its particular nature and disposition, and serve as marks whereon to found our judgment and prognostic of the most probable event, as well as the most proper method of treatment. Various have been the causes to which

^f This is the common language, and therefore I use it; but I would not be understood to mean that the progress of the disease is always and invariably upward, from the testis into the process. I have seen the spermatic process truly cancerous, when the testicle has been free from disease; and am well satisfied, from experience, that a diseased state of the vessels within the abdomen, or of the parts in connexion with those vessels, may produce a morbid state of the process, proceeding downwards from thence; but the other is by much the most frequent.

theoretic and whimsical people have assigned this disease; but as a recital of conjectures can convey no instruction or useful information, I shall pass them over; and only take notice, that among the great number which have been mentioned, there are two, which, though equally groundless with the rest, have yet obtained a degree of credit that may mislead: these two are the *hernia humoralis*, and the hydrocele of the vaginal tunic.

The *hernia humoralis* is a defluxion of the inflammatory kind, proceeding most frequently from an irritation in that part of the urethra, where the *vasa deferentia*, or *vesiculæ seminales* terminate. It is attended with pain and heat, and most frequently fever. During the first, or inflamed state of the disease, the whole compages of the testicle is^a enlarged; but when by rest, evacuation, and proper applications, that inflammation is calmed, there seldom or never remains, either fulness, hardness, or any other mark of disease in the glandular part of the testis. The epididymis indeed seldom escapes so well: that often continues enlarged and indurated for a considerable space of time, but without producing either pain or inconvenience; and without occasioning any alteration in the figure or structure of what is called the body of the testicle: whereas the true *sarcocele*, or *hernia carnosæ*, most commonly^b begins by an indolent induration of that

^a I say most commonly, because it is neither necessarily, nor always.

part of the testis, and affects the epididymis secondarily; or after it has already spoiled the vascular part of the gland.

I would not be understood to mean, that a sarcocele never follows a hernia humoralis; there is no reason in nature why it should not: a hernia humoralis does not, nor can prevent the testicle, in any future time, from becoming scirrhus: I only say, that it does not, at any time, necessarily cause or produce it. So also with regard to the epididymis; I do not mean to say, that it never is the primary and original seat of a scirrhus; I know that it is, and shall produce some instances of it. Neither do I intend to say, that a scirrhus never attacks an epididymis, which has been previously hardened by a hernia humoralis: there can be no reason why it should not; I only mean to signify, that it is my opinion, that the induration caused by a venereal hernia humoralis does not, at any time, necessarily produce a scirrhus. A scirrhus indeed may fall on that part, after it has been so diseased, but it would as certainly have attacked it, if there had been no preceding affection of it.

There is also a venereal affection of the testicle, independent of a gonorrhea, or of any disease of the urethra.

This is seldom an early symptom; and I do not remember ever to have seen an instance in which it was not either immediately preceded, or accompanied, by some other appearance plainly venereal. It has neither the inequality, nor darting pains of the scirrhus, and always gives

way to a mercurial process properly conducted.

A quantity of water is frequently collected in the vaginal coat of a truly scirrhus testis. This has given rise to the supposition, that the testicle often becomes diseased, from its being surrounded by, or swimming in, the same fluid—a supposition entirely groundless.

That scirrhus and cancerous testes very frequently are found to have a quantity of fluid accumulated in the tunica vaginalis of them, is beyond all doubt; but that such testicles become diseased, in consequence of being surrounded by such fluid, or, in other words, that a simple hydrocele may produce a scirrhus testicle, is by no means true.

The simple hydrocele is (as I have already at large observed) a collection of water in the tunica vaginalis: this fluid, in a natural and healthy state of the parts, is small in quantity, and, by being constantly absorbed, does not distend the cavity of the tunic, but only serves to keep that membrane from contracting any unnatural cohesion with the tunica albuginea. The regular absorption of this fluid being by some means prevented, the quantity soon becomes considerable, and, distending its containing bag, constitutes the disease called a hydrocele; but makes no morbid alteration in the structure of the testicle^h.

^h That is, no such alteration as renders it painful, or incapable of executing its office; and consequently, no such alter-

When the testicle becomes enlarged in size, hardened in texture, craggy and unequal in its surface, painful upon or after being handled, attended with irregular pains shooting up the groin toward the back, and this without any previous inflammation, disease, or injury from external violence, it is said to be affected with a scirrhus. This, as I have already remarked, is of different kinds and degrees, and appears under different forms; but although the appearances which the disease makes, are various, according to the alteration produced by it in the testicle, yet, every such morbid alteration may obstruct or prevent the regular absorption of the fluid deposited in the vaginal tunic, and occasion a species of hydrocele; that is, a tumor from water.

This is that kind of disease, which, by Fabricius ab Aquapendente, is called hydro-sarcocele; but which was so very unlike to a simple hydrocele, that whoever mistakes the one for the other, will commit an error, which may prove very mischievous to his patient, and very detrimental to himself.

In the true simple hydrocele, the testis, though somewhat loosened in its texture, and a little enlarged, yet preserves very nearly its natural form; the collection is made without pain or uneasiness, and very soon becomes sufficient to hide or conceal the testicle; nor is the

operation as can ever require extirpation, or any other surgical operation on the testicle itself.

examination of such tumor attended with any pain: but the increased size, and hardened state, of the scirrhus testis, renders it discoverable, through a much larger quantity of fluid than will totally conceal the former. When felt, it will be found to be hard, and generally somewhat unequal, and not unfrequently attended with irregular shooting pains, especially after having been examined.

In the simple hydrocele, the fluid distends the tunica vaginalis so equally, that, although it does not surround the testicle (nor indeed can), yet it seems so to do: whereas in the hydro-sarcocoele, though the anterior part of the tumor may, in some measure, bear the appearance of a simple hydrocele; yet, an examination of its posterior part will always discover the true nature of the caseⁱ: to which may be added, that, under the same apparent magnitude, the latter will always be found to be considerably heavier than the former.

ⁱ This has been very judiciously remarked by Mr. Le Dran. Schenkius gives an account of a beginning sarcocoele which was mistaken for an hydrocele; upon which a radical cure was performed by castration. Upon dividing the body of the testis, a quantity of thick fluid was discharged; a thing by no means uncommon, but which was here mistaken for semen. The patient died not long after the wound was healed; and the kidney on that side, and the parts about it, made a very morbid appearance. This appearance was by Schenkius supposed to be owing to the hasty cure of the hydrocele; but was indeed the effect of the same virus which had first spoiled the testicle. Neither was the fluid in the body of it semen, but sanies or matter; a circumstance most frequently met with in scirrhus testes.

In short, the name of this species of disease (hydro-sarcocele) is undoubtedly a very proper one, and capable of conveying a very just idea of its true nature, *viz.* an accumulation or collection of water in the vaginal coat of a schirrous or diseased testicle: but the majority of writers have, by supposing the water to be the cause instead of the consequence of the diseased state of the testis, committed a very material blunder, and endeavoured to establish and authorise a very prejudicial and destructive method of practice. For, by conceiving that the noxious quality of the fluid produces a fungous or fleshy excrescence on the surface of the testicle, they have supposed, that after having discharged the said fluid from its containing bag, they could, either by establishing a suppuration, or by using escharotic medicines, waste or destroy the said excrescence, and obtain a radical cure of the whole disease. Now the scirrhusity of the testicle being the original disease, and the extravasation a mere accident, such treatment can never do any material good, and may often be the cause of very essential evil.

Fabritius ab Aquapendente has given a particular description of this method, which he recommends, from having practised it with success: his words are, “ *Modus singularis est*
“ *quando hernia aquosa cum carnosâ mista est;*
“ *tunc enim primum incide, et fac foramen in*
“ *parte scroti quæ non sit declivis, neque in*
“ *fundo scroti, sed circa medium; nec fac ad-*
“ *modum latum: et extracta aqua, turundam*

“ impone quam longissimam, medicamento, pus
 “ moventi infectam, ut resina terebinthinæ,
 “ cum thure, ovi vitello, et butyro; emplastrum
 “ emolliens, et pus movens applica, ut diachylon
 “ cum gummis, et axungia porci; genitum
 “ autem pus, non evacuetur per foramen, sed
 “ data opera intus servetur, ut *contactu suo, car-*
 “ *nem sensim putrefaciat.* Neque inovanda me-
 “ dicamenta, nisi tota *caro fuerit in pus conversa;*
 “ id quod longo sit tempore^k.”

Now, to pass over the absurdity of the doctrine of removing or dissolving a fungous excrescence, by means of the putrefying quality of matter, as well as the great disturbance which must be the consequence of confining it within the tunica vaginalis; it is very clear from these, and from every other circumstance attending the disease in question, that the cases, which Fabritius had successfully made his experiment upon, must have been mere simple hydroceles, attended with a small degree of enlargement; but without any diseased state of the testicle.

This is one method of procuring a radical cure of the said disease—a method in use, before Fabritius practised it; and still in some measure employed—a method which, in some instances, has always been successful; and which may, in

^k “ Si carnosæ, et aquosæ sit hernia, ego talem adhibeo
 “ curam; seco cutem, et incisionem facio exiguam, et in loco
 “ potius altiore, quam in fundo: inde turunda imposita cum
 “ digestivo et pus movente medicamento diutius procedo, ne-
 “ que unquam pus extraho, sed perpetuo bonam partem intus
 “ relinquo; quod sensim carnem corripit, et ita sanat.”

general, be tried on any simple hydrocele, in a young and healthy subject. The cure (when it effects one) is not brought about by the destruction of an excrescence from the testicle, or the dissolution of its supposed induration; but merely by exciting such an inflammation, as shall occasion an adhesion of the tunica vaginalis to the tunica albuginea; by which means, the cavity of the former is obliterated; the testicle remaining, as to size and consistence, just as it was before such operation was performed¹. But this, though practicable, and sometimes successful in the hydrocele, is not to be thought of in the diseased or scirrhus testicle. The

¹ Another method of treating this disease, in use before Fabritius ab Aquapendente (as may be seen in Guido and others), and much preferable if used in proper cases, is the method by seton.

This, as I have already observed, I have several times practised with success, in those who would not submit to incision, or in whom it was by no means proper.

Fabritius ab Aquapendente had a different, and that an erroneous, idea of this disease: he conceived, that there was a fungous kind of excrescence on the testicle, and that this excrescence required erosion and destruction: this he aimed at accomplishing, by means of the matter collected within; and therefore his principle aim was to confine and increase it, by making his puncture, for the introduction of his tent, in the upper part of the tumor; and by imbuing it from time to time, medicamentis pus moventibus.

Had he been right in his idea, his practice would have been just: but his conception of the disease was erroneous, and his practice absurd. The rational intention should be, to excite such a degree of inflammation as may produce an union between the tunica vaginalis and the albuginea: the formation of matter is a mere accidental consequence of this inflamma-

operation, as described by Aquapendente, consists of two points; first to let out the water, and then to cause a plentiful suppuration. When the testicle is really and primarily diseased, and the extravasation is a consequence of such disease, the discharge of the water from the cavity of the tunica vaginalis, whether by puncture, or by incision, can contribute nothing material toward a cure of the principal complaint, and is therefore useless; but it may, in many cases, do harm, by creating a disturbance in parts, whose state requires the most perfect quietude; and is therefore wrong. When the disease is a mere simple hydrocele, the palliative cure, as it is called, by puncture, is right and necessary: it renders the life of the patient easy; rids him, every now and then, of a very troublesome burden; is perfectly safe; may be performed and repeated occasionally, at any time of the patient's life, or in almost any state of the disease: but the introduction of tents or setons, or the endeavour by any means to excite inflammation, or to establish suppuration within the tunica vaginalis, requires (even in the simple hydrocele, where the testicle is unaffected) some little consideration, and ought not to be hastily or unadvisedly put in practice.

In some ages, habits, &c. the symptoms will

tion; and the means used to procure the end (provided it be procured) cannot be too gentle. The matter is of no real use, and therefore it is so far from being necessary to confine it, that if the conjunction of the coats can be obtained, without the formation of any, it is so much the better.

rise very high, and occasion both trouble and hazard: and if this be the case, when the testis is not at all diseased, and when there is no malignity, either in the local complaint, or in the habit of the patient, what have we not to fear where there is both? where the parts are already spoiled by disease, and where irritation and inflammation may (and do) excite the most fatiguing symptoms, and the most direful consequences?

Besides the hydro-sarcocele, or limpid extravasation of fluid, in the cavity of the vaginal coat (and which must therefore always be external to the testicle), scirrhus and cancerous testes are liable to collections of fluid, within the substance of them, under the tunica albuginea^m. These are sometimes large, and in one cavity; sometimes small, and in several distinct ones. They are also very different in nature, in different cases; sometimes serous, sometimes

^m Job a Meekren has made a very just and judicious remark on this subject. Fabritius ab Aquapendente had reckoned a collection of fluid, within the tunica albuginea testis, among the kinds of hydrocele. This, Meekren does not allow; but, having described the true hydrocele of the vaginal coat, speaks of this collection within the albuginea, as it really is; that is, as a consequence of the diseased state of the gland. His words are, “ Hieronymus Fabritius ab Aquapendente, Part I. de “ Operat, Chirurg. cap. 75. aquam in testibus congregari docet “ eam quæ ex imo ventre eo defluit: at error est (meo iudicio) “ magni anatomici. Spatio enim eo, quod est inter testiculum “ et tunicam, imo in scroto ipso, aqua sæpius colligitur: nun- “ quam in testibus ipsis, nisi putrescant.”

sanious; sometimes purulent; sometimes bloody. These are very apt to impose on the inadvertent and injudicious (especially if they be attended with some degree of inflammation in the skin); and to induce an opinion of an abscess, or imposthumation, which may be relieved or cured by an opening; but *caveat operator*. These collections will be found to bear a much smaller proportion to the general size of the tumor, than they who are not conversant with them are inclined to apprehend; the subsidence, after the opening has been made, will also be much smaller than was expected; and instead of relief and ease, all the symptoms of pain, swelling, inflammation, &c. will be increased and aggravated; and if the opening be considerable, it not infrequently happens, that an ill-natured fungus is thrust forth, which, by bleeding, gleeing, and being horridly painful, disappoints the surgeon, and renders the state of the patient much more deplorable than it was before. Neither is this sensation, which is thought like the fluctuation of a fluid within the testicle, to be at all times depended upon as implying that there is any fluid at all there. The touch, in this case, is subject to great deception; and I have seen a loosened texture of the whole vascular structure, or body of the testicle, produce a sensation so like to the fluctuation of a fluid lying deep, as has imposed on persons of good judgment and great caution.

Many of the most esteemed writers on this

part of surgery, either not being practitioners, or being afraid to differ from those who have written before them, have lazily and servilely copied each other, and have thereby fallen into an obscure jargon concerning this disease, which neither themselves nor their readers have understood. They have talked of the scirrhus testicle, the caro adnata ad testem, and the caro adnata ad spermatica vasa, as so many different diseases, requiring different methods of treatment.

The melancholia, the atra bilis, and a certain inexplicable adust state of humours, are said to be the causes of these different appearances; and the fleshy substance arising from, or adhering to, the spermatic vessels, is said to be more benign, than either the fungus arising from the testicle, or the true scirrhus. For the first, they have described an operation, which is coarse, cruel, painful, and (notwithstanding all that they have said about it) unsuccessful; all which they must have known, if they had *practised* it. I therefore am much inclined to believe, that this is one of the many parts of ancient surgery, which having been devised by some one bold, hardy operator, and by him described as practicable, has been related by many of his successors as practised. The second, the caro adnata ad testem, they allow to be attended with more difficulty, as well as hazard, and seldom to be attempted with successⁿ.

ⁿ Ramex hæc inter excrescentias annumerari potest, cum
“ sit additamentum ex toto præter naturale; nec illi insunt signa

They, who are under a necessity of forming their opinions principally from books, and who have not frequent opportunities of knowing from

“apostematis, sed tantum ut caro quæ circa scrotum aut epidi-
didymem generari solet.” ANDREAS a CRUCE.

“Curatio ejus est, ut incidatur cutis testiculorum, et excorietur usque ad superiora; deinde extrahe didymum et testiculum, et libera eos ab omni parte ex illo carnositate.”

BRUNUS.

“Fit etiam hernia quandoque ex carnositate quadam præter naturam nascente juxta testiculum; et tunc pellicula incisa undique debet excoriari; et discooperta carnositate illa a corio exteriori usque, superius *cauterio* abscindatur.”

ROLANDUS.

“Cura ejus non potest fieri nisi cum manu pellem exterioriorem scindendo, et carnem a testiculis scarnando, et incarnana-auferendo.”

LANFRANC.

“Scinde pellem testiculi cum rasorio usque ad testiculum, et tunc carnositatem, quam invenis, removeas et excarnes totalitur a testiculo.”

GUL. e SALICETO.

“Notandum est in hac operatione num caro concreverit circa tunicas, an circa ipsos testes; numque firmiter an minus firme adhereat partis substantiæ Incidendum est totum scrotum usque ad carnem concretam, quæ si quidem valenter haud sit affixa, vel summis digitis, vel manubriolo scalpente, a teste vel tunicis, sensim sit auferenda.”

FAB. ab AQUAPENDENTE.

“Caro item sæpissime testiculis, aut eorum tunicis adnascitur, serosus enim humor iste nonnunquam acris factus venas capillares, membranasque leviter erodit. Hinc pars illa sanguinis que paulatim exudat, quæque optima et laudibilis est, beneficio caloris innati, in carneam substantiam concrescit, &c. reliquum vero sanguinis quod serosum est, paulatim membranas totumque scrotum adeo extendit, ut caro ista quæ testiculo adherit, digitis palpari non possit.”

FABRITIUS HILDANUS.

“Secandum est scrotum, et detegenda caro, et a teste deradenda vel a vasis, &c.”

GAB. FALLOPIUS.

The false reasoning, the want of anatomical knowledge, the

experience how very little they are (in many cases) to be depended upon, may be inclined to think that all these distinctions really exist; and that these operations by fire and sword, by

cruelty and inutility of the proposed operations, and the terrible consequences which must follow from their being put in practice, are too glaring to need any comment; and such as must incline every reasonable man to hope, that these authors (and a great multitude of others, who might be named) did in this part of surgery as they have done in many others; that is, copy each other in the precepts relative to the cause and treatment of this disease, but did not put their directions often into practice. The imperfect state of anatomy, in the time of the above cited writers, may be admitted as an excuse for them; but even very late ones have fallen into the same error.

“ In the fungous excrescence upon the testis, when the same is not over-grown, you are to make way thereto; which is then to be consumed by escharotics, or by the actual cautery.”

TURNER.

“ Si quid vero carnis enatum a testiculo deprehenditur, quod graviter hominem affligat, nec discuti tamen per adhibita medicamenta convenientia queat, tum si testiculus integer adhuc est, atque illibatus, feliciter ut plurimum sanari noxa poterit, ipseque testiculus servari; dummodo quicquid præter naturam super increvit, *deoperto scroto*, quam exactissime ab eo *solvatur*, atque rescindatur.”

“ Quod si autem ipsum testiculum invaserit; vel excindi etiam propter nimios cruciatus, vel similes alias causas, indecore prominentes partes nequeant, necessarium utique erit, vel universum testiculum, *vel quandam saltem ejus partem*, modo jam proposito excindere.”

HEISTER.

To set aside the strange distinction between the “ caro enata a testiculo,” and that “ quæ ipsum testiculum invaserit,” (a distinction taken from books only) I believe I may venture to say, that the professor never found, that the operations which he describes and advises, were attended with success; and I hope that he has not often seen them performed.

knives and cauteries, so exactly described, must be sometimes necessary; but having never seen the particular cases requiring such treatment, have a very imperfect idea, either of them, or of the operations; and are, to the last degree, alarmed and intimidated, when any thing, which they think is like to it, occurs to them in practice. To such, it may not be amiss to explain this matter, in as few words as I can; begging pardon of the more intelligent reader for the digression.

In the short anatomical account which I have given of these parts, I have taken no notice, that the spermatic vessels terminate in the testicle; and that, after the semen has been secreted from the blood, it passes from that gland into a body which seems superadded to, although it be really continuous with, it. This body is therefore called the epididymis, and is so placed, with regard to the testis, that a heedless or uninformed observer may suppose, that the spermatic vessels terminate in it; especially if it be enlarged by disease. It takes its rise from the testicle, by a number of vessels, called from their office, vasa efferentia: these soon become one tube, which, being convoluted and contorted in a most wonderful manner, forms the greater part of the said body; and at last, ceasing to be so convoluted, it ends in one firm canal, called the vas deferens; by which, the secreted semen is conveyed from the testicle to the vesiculæ seminales.

Whoever will attentively consider the epididymis in its natural position, with regard to the testicle and the spermatic vessels, will see, that if it be enlarged beyond its proper size, it will extend itself upward, in such a manner as to seem to be closely connected with them, and to bear the resemblance of a diseased body, springing from them.

This is the case called the *caro adnata ad vasa spermatica*; and is really and truly nothing more, than an enlargement of the epididymis; a circumstance which occurs not infrequently, but does not imply any malignity, either in the part or in the patient's habit; and can never require such a horrid operation as our forefathers have directed us to perform upon it; nor indeed any at all.

The epididymis is frequently enlarged, in venereal cases, either separately, as in the remains of a *hernia humoralis*, or together with the testicle, in that affection of it, which I have called the *venereal sarcocoele*; and sometimes from mere relaxation of its natural texture, without any disease at all. But in none of these can it require, or even admit, any manual operation of any kind. Indeed, whoever will consider the epididymis, as it really is, as the medium by and through which the semen is conveyed from the testicle to the *vas deferens*, must immediately be sensible of the glaring absurdity of removing any part of it.

The *scirrhus* and cancer do not very often begin in this part: they most frequently make

the first attack on the body of the testis: and, though the epididymis is often cancerous, yet it most frequently becomes so secondarily, or after the testicle is spoiled; so that the removal of it, if practicable, could serve no good purpose. It would not remove the disease; for that has, before-hand, most commonly taken possession of the testicle; and the cutting off any part of a scirrhus or cancerous tumor of any kind, is what no man, who has the least knowledge of what he is about, will ever think of.

In short, these two cases, which by the inattention and misrepresentation of our ancestors, have created such perplexity in the minds of their readers, are either a simple enlargement of the epididymis, without any morbid alteration in its structure; or a diseased (that is a scirrhus) state of the same part; or else, a scirrhus or cancerous testicle, with inequality of surface. The first of these requires no manual operation of any kind; and the two last will admit of none: the first is no disease at all; and the two last are such diseases, that every attempt made on them, by knife or caustic (unless for total extirpation), must render them worse, and more intractable.

The manner of treating a sarcocele, or hernia carnosae, depends entirely on the particular nature and state of each individual case. In some, it will admit of palliation only; in others, the disease may be eradicated by the extirpation of the part: so that, under the article of method

of cure, we have only to consider, and point out, as clearly as the nature of the disease will permit, what states and circumstances, both of it, and of the patient labouring under it, forbid the operation, and what render it advisable.

On this head, great variety of opinions will be found among writers; so great, that a man, who is under a necessity of forming his judgment from them, will find himself under some difficulty how to act; and so great, that I cannot help thinking it to be clear, that the majority have not written from practice, but from mere conjecture, or from the works of those who have gone before them.

Some have given it us their opinion, that while the testicle is perfectly indolent (let the alteration in its structure, form, or consistence, be what it may), it is better to suffer it to remain, than to remove it. In support of this opinion, they say, that although the disease has plainly taken possession of the part, yet, while it causes no pain, the constitution receives no damage from it; nor is the health of the patient impaired by it: whereas, by removing the testicle, the same virus may seize on some part of more consequence to life. This method of reasoning takes for granted two things, which do not appear to be strictly or constantly true, *viz.* that this disease is never perfectly local; and that a scirrhus testicle, though free from pain, will not in time produce any evil to the general habit of the patient. Others advise us to stay until the tumor becomes

painful, and manifestly increases in size, or acquires a sensible inequality of service; that is (in other words), until it begins to alter from a quiet state, to a malign one: which advice, as well as the preceding, supposes that the hazard of the mere operation of castration is too great to render it an advisable thing, until the patient is pressed by bad symptoms; and that a scirrhus testicle, which has been quiet and free from pain for some time, may be as successfully extirpated after it has become painful, and has acquired a malignant and threatening state, as at any time before such alteration. The latter of these will hardly be admitted (I believe) by those, who form their opinions from experience; and with regard to the former, I can, with great truth, affirm, that I never saw the mere operation of castration, when performed in time, and on a proper subject, prove fatal.

Many people have I known, who have lived several years, their whole lives, perfectly free from disease, after the removal of quiet, indolent, scirrhus testicles; and several have I known, who having deferred the operation until they were urged by pain, increase of size, and inequality of the tumor, have, from the sore becoming cancerous, not been able to obtain a cure. That I have seen the same thing happen, after the removal of a testicle, circumstanced in the best manner, is beyond all doubt; but not near so frequently, as in those cases in which the operation has been deferred until the symptoms became alarming,

and the disease had changed its appearance, from a benign quiet one, to one that was malign and painful. Indeed, were we capable of knowing with certainty which those scirrui were, that would remain quiet and inoffensive through life, or for a great length of time, and which would not, we should then be enabled to advise or dissuade the operation upon much better (that is, much surer) grounds, than at present we are able to do. We have no such degree of knowledge; all our judgment is formed upon the mere recollection of what has happened to others in nearly similar circumstances; and experience, though the best general guide, is, in these cases, more fallacious than in many others.

A few people there certainly have been, who have been so fortunate as to carry a scirrhus testicle through many years, with little or no pain or trouble: but the number of those, in whom time (and that frequently a short space), change of constitution, external accidental injury, &c. do not make such an alteration in this disease, as to render the operation less likely to be successful than it would have been at first, and under more favourable circumstances, is so small, that I think early castration (that is, as soon as the disease is fairly formed and characterised) may be recommended and practised by every honest and judicious surgeon*.

* Scirrhus and cancerous tumors are found in many parts of the body, as well as in the testicle; and in all others. as

Indeed, the circumstances of frequent pain, and a manifest tendency to an increase of

well as in that, bear different characters; that is, show a greater or less disposition to malignity; remaining sometimes of small size, and easy for many years; at others, increasing fast, and so producing great pain, and all its bad consequences.

Of all the kinds of this disease, those which follow upon some external violence (such as blow, bruise, &c.) are thought and said to be the least; therefore, great regard has always been paid to this distinction by writers, and great hopes conceived from this circumstance by patients. I wish I could say, that such hopes were always as well founded as they are thought to be: I mean, that experience most frequently verified them.

When a scirrhus seizes a part that has previously sustained an injury from without, such probable cause is undoubtedly a favourable circumstance: but it does not, by any means, necessarily follow from thence, that the constitution of such person is free from taint. It is a presumption, but not a proof; and this presumption becomes more reasonable, if the diseased state of the part follows such accidental injury soon, than if it appears at a great distance of time.

No man will pretend to say, that such mischief has not been done by outward violence, that cancerous disorders have not followed, in the parts so injured, in persons, who, before such accident, never had any appearance of such disorder; and who possibly might have lived many years, nay, their whole life, without its appearing in such form and manner: but that, previous to such accident, there was no cancerous disposition or malignity in the habit, is an inference which cannot be admitted.

What disorders of the joints do we see produced by very slight injuries done to them? disorders which are clearly and plainly scrophulous, and which would not have appeared at that time, or in that part, had it not been for such accident; but surely no man will from thence conclude, that such people have no scrophulous taint in their blood, or glands, previous to such strain or bruise. How many internal parts are there

size, are by some people looked on as such marks of a malignant disposition, that they

for this disease, as well as some others, to make its attack upon; but which, by being out of sight, and not deemed objects of surgery, are not known; and pass either for other diseases, or for the symptoms of other diseases? What tumors of the lumbal glands and mesentery; what obstructions, in all parts of the contents both of the abdomen and thorax, do we not find, upon examining the dead, whose disorders were very little known or understood while they were living; but whose prevailing indisposition, whose natural dyscrasia, would most probably have shown itself in some more visible part, if such part had accidentally suffered from external violence?

All that we from experience know, and therefore all that we ought honestly to say on this occasion, is, that it has very often happened, that where that kind of disorder, which produces scirrhus or cancerous tumors, has been brought into action by external injury (whether it be in the breast, testicle, or any other part, it matters not); or when such kind of disease has seized such part, no preceding violence having been offered to it, and has therein occasioned a fixed but indolent kind of swelling, which has either remained a long time of one size and state; or, if it has altered, has altered very slowly, and given the patient but little uneasiness; if such tumor has been so situated and circumstanced, that it could safely be extirpated or removed, that such removal or extirpation has often cured the present evil; and that the patient has remained free from any thing of like sort, during his or her life.

This is true, and therefore is and ever will be a sufficient reason for pressing such operation, when all other circumstances are favourable. That the patient may keep well after it, is by no means improbable; that the scirrhus would remain, through life, indolent and inoffensive, is very improbable. But whoever boldly asserts, that such extirpation will always and certainly cure the disease, is very inexperienced, or is wilfully guilty of a deception, the two distinguishing marks of a quack, who always promises, what he either does not know, or does not believe.

have been by them reckoned as dissuasives from the operation.

When a scirrhus or cancer is favourably circumstanced, and so situated as that it may be extirpated, such extirpation is indeed the only remedy; and that method by which such extirpation can be most certainly and expeditiously executed, is, beyond all doubt, the best.

The two in use are, the knife and the caustic. The former, in the hand of a surgeon who is an anatomist, has every advantage which can be desired or supposed: it gives less pain, is more secure and more expeditious; but it impresses on the patient the apprehension of an operation, and the fear of an hæmorrhage. The use of caustic is infinitely more painful, not only in immediate sensation, but in duration: it often requires repetition: it is less manageable, less secure; and the great length of time which sometimes the separation of the mortified parts takes up, renders it very tedious. But it is attended with two circumstances, which have greatly contributed to the support of cancer quackery: one is, that it spares the patient the horror of an operation, which, though infinitely less painful than the effect of the caustic, is not believed to be so: the other is, that the ragged appearance, which the bottom and sides of the parts make after having been removed by such application, is so unlike to the smoothness of that which has been removed by incision, that ignorant people are easily induced to believe, what the designing always tell them, *viz.* that the medicine has taken their disease out by the roots; and that the ragged parts, which they see, are such roots.

It is amazing what weight this single circumstance has with many, and even with some sensible people; few of whom are persuaded to believe what is as true as any proposition in Euclid, *viz.* that a caustic of equal strength, applied on any glandular part of any person, will always produce exactly the same effect and appearance, as, in this case, passes with them for the roots or branches of the disease.

When nurses and quacks talk of the fibrous roots of a cancer, and of cancerous fermentations, they are excusable; the one from their ignorance, the other from the nature of their

But these gentlemen carry their fears and apprehensions much too far the other way. Pain

trade: but when they who pretend to some kind of medical knowledge use this kind of language, it is shameful.

If either the fears of the patient, or the particular circumstances of the part to be removed, render the use of caustic preferable, or necessary, every practitioner is well acquainted with those which are perfectly efficacious; but every practitioner also knows, that good reasons for preferring the use of them to the knife very seldom occur: it is in this as in the attempts toward a radical cure for ruptures, and some other parts of surgery, we are censured where we ought to be applauded, and blamed for those very things from whence we ought to derive praise. We have laid aside certain methods and processes, because we found them (upon experience) to be painful, hazardous, and ineffectual; and these very methods, destructive and infallible as they are, have given credit and honour to those who have had ignorance and inhumanity enough to revive them.

We are not yet so happy as to be possessed of any medicine which will cure a cancerous habit. When the constitution is thoroughly infected, neither our knives or caustics will avail: they can only remove the local mischief, but can have no effect on the general one in the constitution. Whoever says otherwise, says what is not true; and whoever believes otherwise, is imposed upon. When the habit is concerned, as it too frequently is, it must be an internal remedy that proves a specific, whenever we are so happy as to be blessed with the discovery. The supposition, that an escharotic can, by destroying a particular part, eradicate the disease from the habit, is (one would be inclined to suppose) too gross an absurdity for the most credulous believer to swallow; and yet it is believed, and trusted to every day. Indeed, it sometimes happens, in the treatment of these cases, that either the arrival of puberty, a favourable turn in a constitution, or the renewal of long-obstructed evacuations (especially the uterine ones), shall restore the patient to a better state of health, and prevent either the further progress of the disorder, or any new appearance of it in any other place. In this case, if the extirpation was made

and a quick increase of size are certainly no favourable symptoms: they show a disposition to mischief, but they are not such positive proofs of a cancerous habit, as to render all hope of a cure, from the removal of the diseased part, vain: there are many instances to the contrary; and though no honest or judicious man will venture to promise success, even in the most favourable of these cases, yet it is well known, that those which have had very unpromising appearances, not only from the state of the testicle, but from that of the spermatic chord, have succeeded often enough, to make the chance of a cure, by the operation, by no means a desperate one. The state of a man left to his fate in these circumstances, that is, to the fury and progress of the disease, is so truly miserable, that nothing should be left unattempted, which carries with it any probability of being serviceable; and a practitioner is vindicable, in pressing what he has known to be successful; though, at the same time, he ought to make a guarded kind of prognostic.

Upon the whole, I think it may justly be said, that the man who has the misfortune to be afflicted with a truly scirrhus testicle, has very little chance (notwithstanding all that has been said and written about specifics) to get rid of it by

by an external application, and not by an instrument, such application is thought to have wrought the cure, and has all the credit of doing what it really had no share in then, what it never can do, nor have the appearance of doing again, but in the like accidental circumstances.

any means, but by extirpation; and all the time the operation is deferred, he carries about him a part not only useless and burthensome, but which is every day liable, from many circumstances (both external and internal), to become worse, and more unfit for such operation.

While the testicle is small, and free from acute or frequent pain, the vessels from which it is dependent are most frequently soft, and free from disease; whereas, when the testis has been suffered to attain a considerable size, the case is frequently otherwise; the spermatic vessels are often large and varicose; and the cellular membrane investing them sometimes becomes thick, and contracts such connexions and adhesions, which, though they may not amount to an absolute prohibition of the operation, do yet render it tedious, troublesome, and more hazardous, than it would be in other circumstances. Every addition to the original complaint in the body of the gland is against the patient; and if any of these are the consequence of not having removed it in time, it will follow, that the sooner it is removed, the better. If we wait for what some call indications of the necessity of operating, we shall often stay until it will do no good. Many a one have I seen lose a very probable chance of a cure by delay: but I do not remember ever to have seen a testicle removed, by a man of judgment, which testicle did not, upon examination, fully vindicate the extirpation. If we were possessed of any medicine, either external or internal, which had been known now and then to have

dissolved scirrhi, it would always be right to recommend the trial of them previous to an operation; and it would always be right to defer operating until such trial had been made. But the truth is, we know no such medicine. The credulous on the one hand, and the designing on the other, have told us many strange stories of cures effected by such applications and remedies; and I do most sincerely wish, that what each of them have said was true: but repeated, faithful experience has proved that it is not; and that they who have placed their confidence in them, or laid out their money on them, have been disappointed and cheated.

Some circumstances there are now and then attending this disease, which are out of our sight, and out of our knowledge, and which will render all our pains abortive: such are tubercles, indurations, and other diseased appearances in the cellular membrane enveloping the spermatic vessels within the abdomen; scirrhus, viscera, &c. If any of these can be known, they constitute a good reason for not attempting the cure by the operation: but the mere possibility that such may exist, is certainly no reason for abstaining from it. The apparent evil, that is, the diseased testis, is certain; the other may or may not be the case. The one, if left to itself, is most likely to destroy the patient in a most miserable and tedious manner; and the other (the suspected mischief) may possibly not exist.

But though the timely and proper removal of a scirrhus or cancerous testicle does frequently

secure to the patient life, health, and ease, which, in such circumstances, are not attainable by any other means ; yet it must be remarked, that the improper and untimely performance of the operation is not only not attended with such happy and salutary event, but generally brings on high symptoms, and quick destruction. It therefore behoves every practitioner to be perfectly well acquainted, not only with such circumstances as render castration practicable and advisable, but with those which prohibit such attempt.

These are of two kinds, and relate either to the general habit of the patient, and the disorders and indispositions of some of the viscera, or to the state of the testicle and spermatic chord.

A pale, sallow complexion, in those who used to look otherwise ; a wan countenance and loss of appetite and flesh, without any acute disorder ; a fever of the hectic kind ; and frequent pain in the back and bowels, are, in those who are afflicted with a scirrhus testicle, such circumstances as would induce a suspicion of some latent mischief, and incline one to suppose that the same kind of virus, which had apparently spoiled the testis, may also have exerted its malign influence on some of the viscera : in which case, success from the mere removal of the testicle is not to be expected. They, whose constitutions are spoiled by debauchery and intemperance, previous to their being attacked with this disease, who have hard livers, and anasarclous limbs, are not proper subjects for such an opera-

tion. Hard tumors within the abdomen, in the regions of the liver, spleen, kidneys, or mesentery, implying a diseased state of the said viscera, are very material objections to the removal of the local evil in the scrotum. In short, whenever there are manifest appearances or symptoms of a truly diseased state of any of the principal viscera, the success of the operation becomes very doubtful; more especially, if such symptoms and appearances, upon being properly treated, resist in such manner, as to make it most probable, that a cancerous virus is the real cause of them. When none of these require our attention, the object of consideration is the testicle and its spermatic vessels. The state of the mere testis can hardly ever be any objection to the operation; the sole consideration is the spermatic chord. If this be in a natural state, and free from disease, the operation not only may, but ought to be performed, let the condition of the testicle be what it may. If the spermatic chord be really diseased, the operation ought not to be attempted. For although, on the one hand, a probability of success will vindicate an attempt, even though it should fail; yet, on the other, where there is no such probability, an operation, though performed in the most dexterous manner, will prove only a more ingenious method of tormenting.

This therefore (the state of the spermatic chord) is a matter which may require our most serious consideration; since, on this it is (when the disease appears to be local) that we must found

our judgment; and by this must form our resolution, either to leave a man to the truly miserable fate of being slowly, though certainly, destroyed, by a cruelly painful, and frequently very offensive disease; or endeavour to save, and preserve him in health and ease, by means which have so often proved successful, as truly to deserve the appellation of *probable*.

All writers on this subject agree in saying, that if the spermatic process has partaken of the diseased state of the testicle, that is, has become enlarged and hardened, and such enlargement and induration extends itself quite up to the abdominal muscle, that the operation of castration ought not to be performed, because it not only will prove successless, but will hasten the death of the patient. And this is, in some degree, most certainly true; but not without some limitation. A truly and absolutely diseased state of the spermatic chord, in any part of it, is certainly a very material objection to the operation, as it most commonly proves a bar to the success of it; and a morbid state of the same chord quite as high as the abdominal muscle, that is, of all that part of it which is external to the cavity of the belly, is a just and full prohibition against such attempt. But on the other hand it must be observed, that every apparently morbid alteration of the spermatic chord is not really such; and therefore, that every enlargement, induration, fulness, &c. which seems to alter the spermatic vessels from that state which is called a healthy and natural one, is not to be

regarded as a disease; at least, not as such a disease as is sufficient to prohibit the attempt to obtain a cure by extirpation.

The difference between these, it is the duty of every practitioner to become perfectly acquainted with, as it is from a consideration of these, that he ought to determine, whether he may, with that firmness and assurance which the probable expectation of success will give him, propose and advise castration; or find himself obliged in conscience to dissuade, or refuse, the performance of it.

When the spermatic vessels are not only turgid and full, but firm and hard; when the membrane, which invests and connects them, has lost its natural softness and cellular texture, and has contracted such a state, and such adhesions, as not only greatly to exceed its natural size, but to become unequal, knotty, and painful, upon being handled; and this state has possessed all that part of the chord, which is between the opening in the oblique muscle and the testicle, no prudent, judicious, or humane man will attempt the operation; because he will most certainly not only do no good to his patient, but will bring on such symptoms as will most rapidly as well as painfully destroy him. Of this there are so many proofs, that the truth of it is incontestible.

In some modern French books, we have indeed miraculous accounts of operations of this kind, performed by dividing the tendon of the oblique muscle, by tracing the diseased sper-

matic vessels within the cavity of the belly, and there making the ligature and excision: but these are operations which make a figure in books only, and are performed only by visionary writers; or, if ever they have been practised, serve to show the rashness and insensibility of the operators, much more than their judgment or humanity. Whoever (notwithstanding these tales) performs the operation in the circumstances above mentioned, will prove himself much more hardy than judicious; and will destroy his patient, without having the satisfaction of thinking that his attempt, though successful, was yet vindicable; the only circumstance which can, in such events, give comfort to a man who thinks rightly.

On the other hand, as I have already said, every enlargement of the spermatic chord is not of this kind, nor by any means sufficient to prohibit or prevent the operation.

These alterations, or enlargements, arise from two causes, *viz.* a varicose dilatation of the spermatic vein, and a collection, or collections, of fluid in the membrane investing and enveloping the said vessels. In the first place, as there is no reason in nature why a testicle, whose vessels have previously (for some time perhaps) been in a varicose state, should not become scirrhus; so it is also clear, that the scirrhusity seizing such testicle, will by no means remove, or even lessen, such varicose dilatation of the vessels from which it is dependent: on the contrary, will most probably,

and indeed does most frequently, increase such distention: but such mere varicose enlargement of the vessels, whether it be previous or consequential to the morbid state of the testis, does not, nor ought to, prevent the removal of it, if otherwise fit and right. It is indeed an objection to the doctrine of Mr. Le Dran, and a few other writers, who make no ligature on the chord, and trust to a slight contusion of it between the finger and thumb for a suppression of the hæmorrhage; but is none to the rest of the operation, as I can from experience testify.

In the next place, the diseased state of a truly scirrhus testicle, its weight, and the alteration that must be made in the due and proper circulation of the blood, through both it and the vessels from which it is dependent, may and do concur in inducing a varicose dilatation of the spermatic vein, without producing that knotty, morbid alteration and hardness, which forbid our attempts. Between these, a judicious and experienced examiner will generally be able to distinguish.

In the former (the truly diseased state) the chord is not only enlarged, but feels unequally hard and knotty; the parts of which it is composed are undistinguishably blended together; it is either immediately painful to the touch, or becomes so soon after being examined; the patient complains of frequent pains shooting up through his groin into his back; and from the diseased state of the membrane composing the

tunica communis, such adhesions and connexions are sometimes contracted, as either fix the process in the groin, or render it difficult to get the finger and thumb quite round it.

In the other (the mere varicose distension), the vessels, though considerably enlarged and dilated, are nevertheless smooth, soft, and compressible; the whole process is loose and free, and will easily permit the fingers of an examiner to go all round it, and to distinguish the parts of which it is composed. It is not painful to the touch; nor does the examination of it produce, or occasion, those darting pains which almost always attend handling a process malignantly indurated.

I do not say, that the distinction between these two states is always and invariably to be made: but that it often may, I know from repeated experience; and that the operation may safely be attempted, and successfully be performed, I know from the same experience. The state of a man, left to the mercy of a malignant scirrhus, is so truly deplorable, that we cannot be too attentive in examining the precise nature of each individual case, and in embracing every opportunity of giving him that relief, which it may at one time be in our power to give, and which, the favorable opportunity missed, it may never be in his power again to receive.

The other circumstance which I have mentioned as capable of deceiving an operator, and

inducing him to believe that the spermatic chord is much more diseased than it really is, and thereby deterring him from the performance of an operation which might prove successful, is the extravasation, or collection of fluid in the cellular membrane enveloping the spermatic vessels, between the abdominal opening and the testis.

In the cellular membrane leading to a diseased testicle, it is no very uncommon thing to find collections of extravasated fluid. These, as they add considerably to the bulk, and apparent size, of the process, make the complaint appear more terrible; and, as I have just said, less likely to admit relief.

When this extravasation is general through all the cells of the investing membrane, and the spermatic vessels themselves are hardened, knotty, and diseased, the case is without remedy; for although a puncture, or an incision, will undoubtedly give discharge to some, or even the greatest part of the fluid; yet this extravasation is so small, and so insignificant a circumstance of the disease, and the parts in this state are so little capable of bearing irritation, that an attempt of this kind must be ineffectual, and may prove mischievous.

But on the other hand, collections of water are sometimes made in the same membrane, from an obstruction to the proper circulation through the numerous lymphatics in the spermatic process, while the vessels themselves are really not diseased, and therefore very capable

of permitting the operation. In this case, the fluid is generally in one cyst, or bag, like to an encysted hydrocele, and the spermatic chord, cyst and all, are easily moveable from side to side; contrary to the preceding state, in which the general load in the membrane fixes the whole process, and renders it almost immoveable.

A discharge of the fluid will, in this case, enable the operator to examine the true state of the process, and, as I have twice or thrice seen, put it into his power to free his patient from one of the most terrible calamities, which can befall a man.

There is one more circumstance relative to the scirrhus testicle, which appears to me to be worth attending to, as I cannot help thinking, that it has misled many, who have not had sufficient opportunity of comparing theory with practice.

It has been confidently asserted, and is generally believed, that a scirrhus testicle never begins in the epididymis of the said testicle. The consequence of this doctrine is, that when a disease, which affects a testicle, by enlarging and hardening it, makes its first attack on the epididymis only, such disease is not allowed to be a scirrhus, nor permitted to be treated as such.

That inflammatory kind of tumor, which, in the virulent gonorrhea, seizes the testicle, and is called the *hernia humoralis*, affects the epididymis; and, even under the best care, some-

times leaves it too large, and too hard. This is said never to end in, or produce a scirrhus; and I do not recollect that I have ever known it do so. The disease which consists in an induration and enlargement of the whole testicle, in the more confirmed lues, affects the epididymis also, as well as the glandular part of the testicle; and I do not remember to have seen it either become cancerous, or not yield to mercury, properly administered. But that a true scirrhus, or cancer, sometimes makes its first attack on the epididymis, which it alters or spoils, before it at all affects the testicle, is a truth, of which I have not the least doubt. Among others, I formerly believed the contrary doctrine; and, in the first edition of this book, have given it as my opinion; but I am, from experience, so perfectly convinced of the truth of what I have now asserted, that I think myself obliged to declare it. The mistake, I suppose to have been made by the first propagators of this opinion, thus: The hernia humoralis, and the venereal sarcocoele, always enlarge the epididymis, and generally leave it somewhat too hard: both these have, by adventurous and unknowing people, been mistaken for scirrhi: but it being found, by experience, that these alterations in the epididymis, were either totally removed by medicine, or, if any part remained, it continued harmless through life, an inference was drawn, that as true scirrhi are not often either removed by medicine, or continue harmless, therefore an original affection of the epididymis could never

be a true scirrhus—a deduction, which the premises do not by any means authorise; and which I am satisfied is not true.

The operation of castration is performed as follows:—

The patient being laid on a table of convenient height, the integuments covering the spermatic vessels in the groin are to be divided. This incision should be begun, as nearly as can be, opposite to the opening in the abdominal muscle, and should be continued a good way down the scrotum.

The manner of beginning this incision is differently described by writers; some of them advising that the skin be held up by an assistant; others that the knife be used perpendicularly, in this as in other parts. It is indeed a matter of no importance at all either to patient or surgeon, and therefore may very safely be left to the choice of the latter; but the length of the division is of consequence to both. A small wound will indeed serve to lay bare the spermatic chord, but it will not permit the operator to do what is necessary afterward, with dexterity or facility: a small wound gives as much pain in the infliction as a large one; and, as the scrotum must, first or last, be divided nearly to the bottom, it had better be done at first, on every account. The spermatic chord, thus laid bare, is to be freed from its surrounding membranous connexions; and then the operator, with his finger and thumb separating the blood-vessels from the vas deferens, must pass a needle, armed with a liga-

ture, between them; and having tied the former only, must cut through or divide the whole chord at a quarter or half an inch distance from the said ligature, according as the state of the process and testicle will admit. This done—he is then (with the same knife, with which he has performed the former part of the operation) to dissect the testicle out from its connexion with the scrotum: the loose texture of the dartos, the previous separation of the testicle from the spermatic vessels, and the help of an assistant to hold up the lips of the wound, will enable him to do this with very little pain to the patient, and great facility to himself^p.

If any considerable artery bleeds, either in the scrotum or in the dartos, it must be restrained by ligature; and when that is done, the void space in which the testicle was, is to be very *lightly* filled with soft dry lint^q; which lint should

^p This circumstance of cutting off the testicle, before it be dissected out from the scrotum, immediately after the ligature has been made, is of more consequence to the patient's ease, as well as to the facility and expedition of the operation, than they who have not tried it are aware of.

^q Lint, however soft and lightly applied, acts as a foreign body, and prevents the immediate union of the wound. Our present method, and which Mr. Pott practised since his publication of this work, appears to be a considerable improvement on this part of the operation:—When the testis is removed, and the bleeding vessels of the scrotum, if there are any of consequence, are secured, no lint, nor dressing of any kind, is introduced; but the parietes of the wound are brought together and retained by ligatures, more or fewer, according to the extent of the wound, as, from the moisture of the parts, sticking-plaster cannot be depended on: these ligatures should be tied with

be suffered to remain, until it be perfectly loosened by the suppuration from every part of the sore. If it be removed sooner, it must be done by force: in which case, it will give unnecessary pain, and leave a crude, undigested sore; if it be not removed until quite loose, it will give no pain, and the sore will be found clean, and well digested, and requiring no other dressing afterward than mere dry lint; which, from this time, should be applied in such quantity and manner, as to give Nature an opportunity of contracting and healing the wound as fast as she can; in both which, she may be considerably assisted by the judicious exhibition of the bark.

I am very sensible, that in the above direction for the performance of the operation of castration, I have differed from the doctrine of some very

slip knots, that they may be loosened, without a necessity being induced of removing them, in case of any fresh hæmorrhage, which sometimes happens after the patient is warm in bed. Dry lint is then applied and kept on by a simple dressing, avoiding every thing greasy on the edges of the wound: by these means the parts unite and heal in great measure by the first intention; or, if any collection of matter is formed in the cavity which the testis occupied, it will be in small quantity, and easily discharged by the lower part of the wound, which must form a depending and an advantageous opening; after which the granulations will gradually fill the space, and the cure will be but little retarded. This excellent plan of preserving as much sound and undiseased skin as possible, and putting no obstructions in the way of Nature's healing powers, has of late years been applied to almost every species of tumor which it may be necessary to remove, and may be esteemed one of the greatest improvements of modern surgery.

E.

eminent modern practitioners; and particularly from Mr. Le Dran.

No man thinks more highly of Mr. Le Dran's abilities than I do; but, in these matters, every one must take the liberty of judging for himself; and I cannot help thinking, that I have good reason for my opinion.

Mr. Le Dran, having divided the integuments in the groin and scrotum, separates the testicle from the surrounding membrane with his fingers, and with scissors. This method is rather coarse, is unnecessarily painful, and does what must for ever be wrong—multiplies the instruments to be used, without any necessity. The knife, in the hands of any man at all accustomed to the use of one, will execute the whole with more apparent dexterity, with less pain, and much greater expedition^r.

I have, without hesitation, directed the spermatic chord to be tied. Mr. Le Dran's advice is

“ Je fens le scrotum jusqu' au dessous du testicule malade,
 “ et avec mes doigts je detache le testicule d'avec le tissu
 “ cellulaire, qui le tient attaché dans le scrotum. Si quelque
 “ portion membraneuse a de la peine a se detacher, je la coupe
 “ avec des ciseaux.” Mr. De Garengot divides the whole
 scrotum with scissors; and I cannot say that I have not seen it
 done in London: but it is a tedious, coarse, cruel, and very
 unhandy method of doing it. “ Cette premiere incision faite,
 “ l'opérateur poussera de force, le doigt indice, ou le grand
 “ doigt sous la peau, dans les cellules graisseuses, afin d'entrer
 “ dans le scrotum, et il aggrandira son incision, en coupant sur
 “ son doigt avec des ciseaux mousses la peau, qu'il aura separée
 “ des graisses, et il ouvrira ainsi tout le scrotum.”

GARENGOT. OPERAT. CHIR.

different. He advises, that a ligature be passed underneath it; and left there to be tied, or not, as occasion may require.

He then takes the extremity of the latter between his finger and thumb; and, by rubbing, pinching, or bruising, produces a degree of contusion, sufficient (as he thinks) to prevent, in general, any hæmorrhage; and, having so done, he cuts off the testicle from the said chord, immediately below the bruised part, leaving (as I said before) the ligature ready to be tied, if necessary.

This method, of first bruising, and then cutting off the spermatic chord, without making a ligature on it, is also prescribed and practised by some gentlemen of eminence here; and I make not the least doubt, that, both with these gentlemen, and with Mr. Le Dran, it may have been successful; but, as I have seen three people lose a very alarming quantity of blood, and one very nearly his life under it; and as in the many times which I have performed this operation, I never saw the least inconvenience arise from the ligature, I cannot approve the omission of it.

“ Il n’y a que l’artere qui m’interesse, parce qu’il n’y a
 “ qu’elle, qui puisse donner du sang apres que j’aurai coupe le
 “ cordon. Je la prends entre deux doigts a l’endroit, ou elle
 “ passe sur l’os pubis, et avec elle les veines qui l’entourent;
 “ puis je passe entre ces vaisseaux et le canal deferent, que l’on
 “ distingue sous le doigt, a sa dureté, une aiguille enfilée de
 “ deux brins de fil cire. J’ote l’aiguille, et je laisse les fils,
 “ pour faire la ligature au cas qu’elle devienne necessaire. Je
 “ prends aussitot les vaisseaux plus bas que l’os pubis, et je le
 “ froisse entre mes doigts, pour y faire une espee de contu-
 “ sion; puis je coupe le cordon un peu au dessous de cette
 “ endroit froisse.”

M. LE DRAN.

That it would be in the highest degree dangerous to omit

Mr. Le Dran himself not only seems to be apprehensive of what *may* be the consequence, by his passing a ligature, and leaving it ready to be tied, and by the very good reason which he gives for not cutting off the spermatic chord (as most of his countrymen advise) close to the opening in the tendon of the oblique muscle; but also in the same paragraph acknowledges, that a fatal hæmorrhage has been the consequence of the ligature having slipped off, after it has been made^u.

securing the spermatic artery, is now universally acknowledged; but as tying the chord (notwithstanding the vas deferens is left out) is by far the most painful part of the operation, it has been the practice of many good operators to dissect down to the vessel, and to put a ligature round it, by a needle; or, if the vessel be divided, by means of the forceps, without including any surrounding parts; then to divide the remainder of the chord, and finish the operation in the usual manner. E.

“ On demandera, pourquoi je ne fais pas la ligature du cordon immédiatement au dessous de l’anneau, comme les auteurs le prescrivent. Je reponds, que si la ligature s’échappe, on ne peut plus lier l’artere qui se retire au dessus de l’anneau, ou elle peut donner du sang dans le tissu cellulaire du peritoine, et faire *perir le malade, comme l’on a vu arriver.*”

LE DRAN.

“ Si le cordon spermatique est gonflé jusqu’ auprès de l’anneau, on ne peut suivre cette methode; et il faut *absolument* faire la ligature du cordon, immédiatement au dessous de l’anneau.” The remainder of this paragraph does indeed seem a kind of contradiction of the preceding. “ S’il est tres gonflé meme un plus haut que l’anneau, et qu’on ne puisse se dispenser de faire l’operation, il n’y a point de ligature a faire; il faut fendre un peu l’anneau, puis cou-
per le cordon, et l’artere ne donnera pas de sang.” Set aside all consideration of the propriety or impropriety of performing the operation, when the spermatic chord is diseased above the ring (as it is called), what can be the reason, why

In the case of a perfectly sound and unaltered spermatic chord, in which the vessels are not become varicose, and the operator can make his division of them as low as he pleases, this *froissement*, this contusion may be sufficient to prevent an hæmorrhage; but in cases where the spermatic chord is enlarged, Mr. Le Dran himself does not think it safe to trust to it. And that the vessels, from which a scirrhus testicle is dependent, may be considerably enlarged and distended, and that pretty high, and yet not so diseased as to render the operation unadvisable or unsuccessful, I have more than once or twice seen. The compression which may be made, of the extremity of the divided chord against the os pubis, on which some stress seems to be laid, will, whether it be made by the finger, or by compress and bandage, prove more troublesome to the patient, than the very momentary pain of the ligature.

The last circumstance in which I have ventured to differ from the commonly-prescribed rules, is, that I have not advised the removal of any part of the scrotum*.

the artery should not be expected to bleed, after being divided within the abdomen? when the same gentleman allows it to have produced a fatal hæmorrhage, upon retiring into that cavity, or into the cellular membrane of the peritoneum, after having been cut off without the said ring.

* “ Si quelque portion membraneuse a de la peine a se detacher, je la coupe avec des ciseaux; *et quand le testicule est oté*, j’enleve une partie de la peau du scrotum, si cette peau s’est trop etendue par le volume de la tumeur.” LE DRAN.

The same direction is given by Laur. Heister. “ Cutis

My reason is, that I never found it necessary in any case, when the scrotum was not adherent to the testicle.

Let the size of the scirrhus be what it may, the scrotum will corrugate to its natural form, when the wound is healed; and if in the operation it fairly be divided to the bottom, will neither lodge matter during the cure, nor produce any inconvenience afterward.

When it is adherent to the testicle, and the cellular structure of the dartos is thereby destroyed, all such adherent part should certainly be removed; not only because it is diseased, but because it will give the patient a great deal of unnecessary pain to dissect it: but then it should always be removed along with the testicle, in the manner directed by Mr. Samuel Sharpe, and not be dissected off first, and removed afterwards.

By the latter method, the patient's pain is increased, prolonged, and even renewed, without the least necessity.

In every operation, in which a considerable portion of skin is to be divided, and particularly in this, and the amputation of womens' breasts, it should always be remembered, that, as the division of the skin (the general organ of sensation) is the most acute and painful part of what is done by the knife, it cannot be done too

“ *scroti quæ exempto testiculo supervacanea ut resecari forfice debet.*” By which means (that is, by not removing the skin along with the testicle, but afterward) the patient suffers almost as much pain, as the whole operation, properly performed, would occasion; and that without any necessity.

quick, and should always be done at once: the scrotum should always be divided to the bottom, and the circular incision in the skin of a breast always made quite round, before any thing else be thought of^y. If this be not executed properly and perfectly, the operation will be attended with a great deal of pain which might be avoided, and the operator will be justly blameable.

Before I take my leave of this operation, I think it right to give the young practitioner a caution, *viz.* that if the tumor be of a pyriform figure, perfectly smooth, and equal in its surface, and free from pain, notwithstanding the degree of hardness may be great, and he may, in his own opinion, be clear that the tumor is not produced by water, but is a true scirrhus, I would advise him, immediately previous to the operation, to pierce the anterior part with a trocar, in order to be certain. My reason for giving this advice is, that I was once so deceived by every apparent circumstance of a true, equal, indolent scirrhus, that I removed a testicle, which proved upon examination to be so little diseased, that, had I

^y This passage has been quoted as a proof that Mr. Pott's usual practice was to remove the whole skin covering a cancerous breast; but it could only relate to those cases in which the skin was fixed to the gland, and partook of the disease. When it was sound and unaffected, Mr. P. by his doctrine and practice inculcated the preservation of it; and I have many times seen him remove large tumors by means of a simple line, so as to preserve the skin entire. E.

pierced it with a trocar previous to the operation, I could and certainly should have preserved it.

Having, in the immediately preceding pages, given my opinion very explicitly concerning the expediency and propriety of removing, by the operation of castration, a scirrhus testicle, when fairly characterised, and properly circumstanced, it cannot be necessary to relate any such cases. Every man, who is at all conversant with this kind of business, knows, that the operation on proper subjects, and in proper instances, is very frequently successful; and that many people have been by it rescued from immediately impending misery, and have passed many years in health and ease, and in a state to propagate their species.

Particular accounts of such, would appear like mere boastings of success.

Those, therefore, which follow, are selected, either because the fortunate event was not very probable; and they may therefore serve to prove, that we should not too hastily or inadvertently despair:

Or, because their true nature was mistaken; and, therefore, they were improperly treated:

Or, that they were attended with circumstances not to be foreseen or prevented:

Or, that the case was too long neglected, and the operation too long deferred; or performed when success from it was not at all likely:

Or, that they were combined with other complaints, either general or local; by which the best calculated attempts must be frustrated:

Or, that they contain something in their nature which appears to be singular. From each, or all of which, I apprehend the practitioner may reap full as much, if not more, beneficial instruction, than from the most pompous histories of success.

C A S E XXXIX.

A MAN about forty-seven years old, who had been, for the space of three or four years, afflicted with a truly scirrhus testicle, applied to me. He had been more than once, during that time, advised to part with it, but was afraid of the operation. He was now alarmed by an alteration which it had lately undergone; and from some circumstances in his general health which were new. The tumor, from its first appearance, had been indolent and equal, the spermatic chord in a natural state, and he had no other complaints of any kind. The testicle was now very unequal in its surface; it had increased considerably within the last three months; and the spermatic chord was enlarged; that is, become varicose, more than half way from the testicle to the groin. He had also a colicky disorder, which recurred frequently without any purging.

The case was unfavourable; and there appeared to me to be no chance, but from cas-

tration. The state of the spermatic vessels rendered that dubious; but the improbability of the disease remaining in its present state, made it still worth embracing. The general state of the patient's health was also an alarming circumstance; but neither could that be amended, while the local disease remained.

Having apprised him of all these circumstances, he willingly submitted to the operation; which was performed the next day. The state of the process just admitted of making the ligature between the enlarged part and the abdominal muscles. Nothing particular attended the cure; the sore healed very kindly, and the man has enjoyed a good state of health ever since; which is now between four and five years.

CASE XL.

A GENTLEMAN from America applied to me on account of a complaint in one of his testicles. It had, while he was abroad, been supposed to be, and had been treated as, venereal; by which means, what was, at first, a simple, equal, indolent scirrhus, with a spermatic chord unaltered from a natural state, was, when I saw it, unequal, at times painful, and dependent from spermatic vessels considerably enlarged and swollen, though still soft, and free from knot or induration. He was otherwise in perfect health, his age thirty-three, and his constitution unhurt by debauchery or intemperance.

With regard to the testicle, there could be no doubt, either of the nature of the disease, or the propriety of its being removed; but the state of the spermatic vessels was such, as made the prospect of success from castration very uncertain. Two or three consultations were had, the result of all which, were nearly the same; that is, the surgeons were very apprehensive of the operation, from the state of the chord, and therefore would not press it; and the physicians prescribed internal remedies: and among these the cicuta, which luckily happened to disagree so much with the patient, that he would not go on with it—I say luckily, because it thereby prevented the loss of more time in the use of it.

The patient was single, a sensible man, and had a great deal of courage and resolution in his natural constitution.

Having maturely weighed all that had been said to him, and finding that no relief was likely to accrue from medicine, and that his disease was as little likely to stand still, he determined rather to take the chance which the operation would give him, either of sudden destruction, or a cure, than live in that state of anxiety, which must arise from a constant meditation on the nature of his disease.

The operation was performed; and in the execution of it, I was particularly attentive to the state of the vessels. The whole process was, I may venture to say, full double the size it ought to be, and the veins very tortuous, by

their being distended: but there was no induration, nor any inequality, save that proceeding from the varicose state of them.

When the testicle was removed, I examined that also very carefully. The cavity of the tunica vaginalis was, in a great measure, abolished by an almost general adhesion of that membrane with the albuginea; the epididymis was tolerably sound; but the whole compages of the testis hard and diseased; and in the very centre of it was a putrid slough, and a very small quantity of ill-coloured sanies.

It is now above five years since the operation. The patient has enjoyed perfect health ever since, and finds no one inconvenience from the loss of the part.

In these two cases, the event was fortunate beyond expectation. In such circumstances, every thing is to be feared: the operation is seldom advisable, because seldom successful. However, they may stand as instances to prove that where there is even a small foundation for hope, it is better to embrace such opportunity, than to leave the patient to his fate. Neither himself nor his friends should, in such case, be flattered or deceived; but the uncertainty should be laid before them, and the operation should be their own choice.

CASE XLI.

A YOUNG man, about twenty-four years old, desired my opinion concerning a testicle, which

was beginning to enlarge, and was already become very hard.

The account he gave was as follows:—

That, about seven or eight months before, he had a common hernia humoralis, in consequence of the suppression of a gonorrhea by hard riding. That the inflammatory symptoms were soon removed by rest, evacuation, and proper application; but that neither the testicle, nor the epididymis, had ever returned to their natural size. That the surgeon, whose care he had been under, had, since the inflammation was gone off, given him a considerable quantity of mercurial medicine internally, and had rubbed on a good deal of the ointment externally; by which his mouth had been made sore; and that he had also taken two or three mercurial vomits.

The tumor was perfectly indolent, even upon being handled; it had a stony, incompressible kind of hardness; and the spermatic vessels were in a sound natural state.

I told him, that whatever might have given rise to his disease, it was my opinion that it was a true scirrhus; that it would never be cured by medicine; that, although it was quiet, and free from pain now, no man would pretend to say how long it might continue so; and that I should, by all means, advise him to part with it in its present state, rather than stay till such alteration should be made in it, as, though it might induce him to comply, might render the operation unsuccessful. He disapproved my advice, and I saw no more of him for near four months;

at the end of which time he called upon me again.

His testicle was a good deal increased in size, but the spermatic chord still unaffected.

I repeated my former advice, and he again refused to comply.

At the distance of two months from this time, I saw him again. His testicle was still more enlarged, and the cavity of the tunica vaginalis palpably contained a fluid. He said, he had showed it to two other surgeons: both of whom had promised him much relief, if not a cure, by letting out that water, which they told him made the principal part of his disease. I answered, that I had no manner of doubt that there was a fluid; but I apprehended it to be much less in quantity than either he, or they who had promised a cure by letting it out, took it to be; that it appeared to me to make so small a part of the swelling, that I was sure that the decrease of size, upon its discharge, would bear no proportion to his expectation; that this fluid made no part of the original disease, but was an accidental consequence; that an opening made into a testicle so circumstanced might excite very disagreeable symptoms, from which he was at present free; and that my opinion was still, that it ought to be totally removed, or not meddled with.

He left me with much dissatisfaction. He said, that I was too tenacious of my own opinion, and too regardless of that of others. But I had seen too many of these cases to be in any doubt concerning its nature; and I knew the people,

under whose direction he then was, too well to suppose, either that they knew any thing of the matter, or that they would leave any thing unattempted, while he had either credulity or money. Soon after this I heard, that he had submitted to have a puncture made, by which a very small quantity of bloody serum was discharged; but the size of the tumor so little lessened, that his operator would fain have thrust a lancet in again, and deeper; but this the patient would not permit.

Being vexed at what had happened, he came not again to me, till at the distance of near two months more. He was now in a very different state. His complexion was wan and pale, his flesh and appetite gone, his testicle very large, unequal, and painful, and the spermatic chord diseased quite up to his groin. I was very sorry to be obliged to tell him, that I could do him no good; and that the operation was by no means advisable.

He now, of course, fell into the hands of those who only want a little ready money; and having tried two or three of these, he was advised to take the cicuta; which he did for some time, and in large doses, but (as usual) without any real or permanent good effect.

His state, soon after this, became truly deplorable; his testicle was of an amazing size; the spermatic chord, quite up to his belly, so large as hardly to be capable of being grasped by the hand; a very large, hard tumor within that side of the belly; his pain acute and con-

stant; and his flesh, strength, and appetite, totally gone.

In these circumstances, a believer in the omnipotence of the sublimate solution, prescribed it for him: from which he received the advantage of having his death hastened.

CASE XLII.

A MAN about thirty, of a full plethoric habit, showed me a tumor in the spermatic process, about the midway between the groin and testicle: it was hard, circumscribed, indolent when not meddled with, but painful for a long time after having been handled, and the pain of such kind, as to indicate the disease not to have a very benign character: the testicle was perfectly free.

I advised the loosing some blood, gentle evacuation by stool, the use of a suspensory to take off the weight, and desired the patient to let me see him again in about ten days. At the distance of somewhat more than a month, he came to me again; and told me, that from me he had gone to a rupture-doctor, who put a truss on him, and giving him an external application, bad him come to him again in a week; that the pressure of the truss, joined to the irritating quality of the ointment, greatly increased the pain and the swelling; that his doctor then applied an adhesive plaster, and when he had worn that a few days, he thrust a lancet into the body of the tumor; that nothing followed the lancet but blood;

that he enlarged the opening, and filled it with lint; and that for several days after, he had dressed the sore with red powder (precipitate). He had now as truly malignant a cancerous sore as I ever saw; and all the spermatic process above it was so diseased, as to prohibit all thought of an operation. Nothing palliated the fury with which it proceeded; he lived several months in great and constant pain, having a large hard body within the belly (on that side), extending from the groin quite up to the region of the kidney; and which, I make no doubt, consisted of the diseased spermatic vessels.

CASE XLIII.

A MAN, about forty-eight years old, who lived at some considerable distance from London, perceived one of his testicles becoming hard; larger in size than it used to be: and when he was on horseback, somewhat painful.

Having several times had a gonorrhea, and twice been confined with a hernia humoralis, he thought that this swelling was of the same kind, and applied to the apothecary of the town where he lived; who, not being much accustomed to surgery, and being misled by the patient's opinion and account, looked on it in the same light, and gave him several doses of calomel: these not succeeding to his wish, he confined the patient to his bed, applied a poultice to the scrotum, and vomited him twice or thrice, with the mercurius emet. flavus. By this process the man became

feverish; lost his appetite, sleep, and flesh; and the testicle increased, both in size and hardness.

I was now consulted by letter, and gave my opinion, that the case was not venereal; that mercurial medicines, or whatever was likely to increase the circulation, were wrong, and would be found prejudicial; that whatever might become necessary hereafter, the present intentions ought to be, to procure ease, to remove the fever, to keep the body (which had always been costive) gently open, and to acquire strength by the administration of soft, light nourishment; and I recommended the decoct. sarsaparillæ, with milk, for his common drink.

In another letter, which I received at about three weeks' distance from the first, my opinion was asked concerning the cicuta: to which I replied, that in scirrhus and cancerous cases (one of which I took this to be) I had never yet seen it do any good, though taken for a considerable time, and in large doses; but, on the other hand, as I had never seen it do any harm, I could have no objection to its being tried.

In about two months, or a little more, I had another letter, giving me an account that the cicuta had been taken freely, and had also been constantly applied as a cataplasm; that, in about a month after its first application, the pains, both in the part and in the patient's back, were remarkably increased; that he now and then complained of being chilly; and that there had been, from about that time, a palpable fluctuation of a fluid, near to the surface of the

tumor; that this fluid had been let out by the point of a lancet, and proved to be only a small quantity of a bloody serum; that, from the time this opening had been made, the pain as well as the side of the tumor had increased; that, by continuing the cicuta poultice, with the addition of some Burgundy pitch, a collection of matter, or imposthumation, was now produced, plainly to be felt, though deep in the body of the testicle; and I was desired to say what I thought would be the properest manner of giving discharge to it.

I returned answer, that it was a very disagreeable thing to be obliged to give a positive opinion on a case by relation only; and that from those who I was sure thought not of it as I did. That as it was by no means unlikely that I might be mistaken, I desired, that what I should now say might not be understood or applied to any other case, than what *I took this to be*; that I took it to be a scirrhus, which was becoming cancerous apace, and would very soon show more of its malignant disposition; especially if irritated. That the fluid, which had been let out, was nothing more than the water of the tunica vaginalis, whose absorption was prevented; and whose colour was produced by the diseased state of the testicle. That I should not have advised the letting it out at all; much less in that small quantity. That it was my opinion, that the fluid, which was now supposed to be felt to fluctuate deep in the body of the testicle, was by no means matter, or the effect of a kindly suppu-

ration: but a malignant sanies, the consequence of the very diseased state of the testis. That I did verily believe they would find, that the quantity of it bore small proportion to the size of the general tumor. That the letting it out would more probably occasion an aggravation than an alleviation of symptoms, and render the disease still more painful and more hazardous than it was already. And that I should not be surprised to hear, that there was no fluid at all.

To this I received a short reply, signifying that it was apprehended I had mistaken the case. That another gentleman in London had been consulted, who (from the account given of the state of the spermatic chord, of the preceding herniæ humorales, and, most probably, from a misrepresentation of the case) had advised the making an opening by knife; which had been done; but the writer of the letter did not say a word about what was let out.

I heard no more of the case, or patient, for near another month; and then was sent for, one evening, to an inn in this town, where I found him in a situation truly deplorable. The testicle was amazingly large, and one half of it covered by a prodigious fungus, which was intolerably painful, gleeted largely, and at times bled profusely; the spermatic process was also very large, and a tumor plainly to be felt within the belly, caused by the diseased state of the seminal vessels. The man's strength and flesh were exhausted: in short he was dying, and did not live above a week or ten days from this time.

I believe it must be unnecessary for me to observe, that the misconception of the nature and the method of treating the three preceding cases, had no small share in contributing to the sufferings of the patients, and to the fatality of their events. I believe also, that most practitioners who have been conversant with this kind of business, will be of opinion that the operation, performed in due time, would certainly have contributed to the ease, and perhaps to the preservation of them.

A cancerous disposition in the habit will certainly render a patient liable to be destroyed, by the diseased state of parts out of our reach; and thereby render the operation, although performed in due time, in the best manner, and under the most favourable apparent circumstances, unsuccessful: but as this very often cannot be foreseen, or foreknown, surely it must be very wrong to omit doing what may preserve health and life, only because it may also happen, that it may do neither. In all these cases, a guarded prognostic should be made; and it should be considered, that though we are sometimes deceived and frustrated by sinister events, yet, on the other hand, it happens, and that not infrequently, that cases which have even an unfavourable and threatening aspect at first, come to a very happy issue.

CASE XLIV.

A MAN, about fifty years old, desired my advice concerning a diseased testicle. It was about the size of a small promegranate, very hard, perfectly free from pain, and the sper-matic process free from all appearance of disease. Castration, he said, he was determined not to submit to; and only wanted to know, whether I could put him into any other method of getting rid of his disease. I gave him my opinion very freely, on the great improbability of his being served by any other means; and though I did, in some degree, advise him to submit to the operation, yet there were some circumstances in his general health, which induced me not to press it; and made me rather pleased, that he was previously determined against it. He had a very sallow diseased complexion, a general want of muscular flesh and firmness; a very frequent colic, sometimes attended with a threatening diarrhœa, and sometimes with an obstinate constipation. In the space of two or three years, he took a great variety of medicines, and saw a great number of practitioners, both regular and irregular, but found no benefit; neither did the testicle in all that space of time suffer any material alteration, or the process become at all affected. He died of an obstinate and painful dysentery; and when he was opened, his mesentery was found full of large, hard, scir-

rhous knots; all the lymphatic glands about the receptaculum chyli, and beginning of the thoracic duct, remarkably diseased; and the liver much enlarged and hardened.

The want of an healthy appearance, the pains and other complaints which attended the man, might have been owing to causes independent of his scirrhus testicle; and upon such supposition, the removal of the said testicle by the operation might have been vindicable: but if it had been done, it should have been under a very guarded and doubtful prognostic.

CASE XLV.

A MAN about fifty, showed me a large, diseased testicle, which he said had been gradually, for near four years, getting to that size and state; and was produced, as he thought, by the kick of a child.

The surgeon who attended his family had often seen it, while it was small, equal, and free from pain; and had as often pressed him to part with it: but while it was easy, he would never think of it.

It was now large, and unequally hard; it had, in some parts of it, a quantity of fluid, in others none; it was very painful to the touch; it gave him great uneasiness in his back, from its weight; and even while it was suspended, or he was in bed, he had such and so frequent darting pains in it, as to render him very unhappy, and to deprive him very much of his natural rest. The

spermatic chord was perfectly free; but the frequency of his pain, and the disturbance of his sleep, gave him a very unhealthy appearance. I told him, that I thought he had missed the most favourable opportunity, by not submitting to the operation while the testicle was small, smooth, and indolent; that some circumstances in his general state and habit were unfavourable; but still, as the spermatic process was free, and as there was no great probability that the testicle would ever again be easy, or cease to increase in size until the spermatics should become diseased also, I thought it was better to take the chance of the operation, than submit to that certain misery which must attend the further progress of the disease.

The patient consented; the operation was performed; and every thing went on in the most favourable manner, till the sore was reduced to the size of a sixpence; he was then seized with a pain in his belly, the sore changed its aspect, and from appearing to be almost healed, it fretted, became foul, spongy, and spread so considerably, that in a fortnight's time it was as broad as a hand; it bled frequently, gleeted largely, was extremely painful, and very offensive; nothing that was done had any good effect on it; and, having languished some months, he died.

Some of the circumstances in this case were undoubtedly unfavourable; but I have seen people do very well under similar ones; and I

still think, that the patient chose the lesser of the two evils, and embraced the more probable chance.

CASE XLVI.

A POOR man, who was in St. Bartholomew's hospital for a hurt in one of his legs, desired me to look at his scrotum, which was of a very large size.

The tumor was principally formed by water in the tunica vaginalis testis; but, through the fluid, it was easy to distinguish a diseased testicle. He complained of uneasiness from the weight, and had, he said, now and then a pain shot up from the testicle into his back: he had also, now and then, a colic, with nausea and inclination to vomit; and was very subject to a sort of stranguery. I drew off near a wine-quart of a yellow thin fluid, by means of a trocar; and when that was done, was so satisfied that the testis was diseased, that I would have immediately removed it; but the man would not consent. He soon got well of his leg, and was discharged from the hospital.

He was a bricklayer's labourer; and in about a fortnight or three weeks' time from his discharge, fell from a high scaffold, and was so much hurt that he died, after he had been again in the hospital two days; and I gladly embraced the opportunity of examining his dead body. The tunica vaginalis was not only much distended, but considerably thickened. The testicle was a

great deal too large and too hard; but upon division, did not show any considerable mark of disease, except in its very centre, where there was a small quantity of discoloured sanies, and a putrid slough. The spermatic vessels were not at all altered from a natural state, except that the vein was varicose. Immediately below the emulgent vessels, on the right side, was an irregular tumor, near as big as the kidney itself, perfectly scirrhus, and firmly attached both to the renal blood-vessels, and to the aorta. The external part of this tumor was rough and unequal, and of a whitish colour; and in the centre of it were exactly the same appearances as within the testicle, *viz.* a small quantity of matter, and a slough.

Where the ureter was crossed by this tumor, it was much compressed and straitened in its diameter; but below this stricture it was considerably dilated. The kidney was not quite healthy in its appearance.

Had this man been castrated, I make no doubt that his internal scirrhus would have destroyed him: but that was a circumstance not to be collected from his general state, or from his complaints, and therefore not to be foreknown: the operation would therefore have been vindicable, though unsuccessful.

CASE XLVII.

A MIDDLE-AGED man was brought into St. Bartholomew's hospital for an accidental hurt

of which he soon got well; and when he was going to be discharged, he desired Mr. Freke, whose patient he had been, to look at one of his testicles. It was large, and unequally hard; gave him a great deal of pain at short intervals; and seemed to contain a quantity of fluid in its middle part: the spermatic chord was pretty free, just at its exit from the abdomen; but all between that point and the testicle was much diseased.

Some of the gentlemen present expressed their apprehensions, that the *state* of the process was such, that the operation would most probably be unsuccessful, and therefore they were rather inclined, that the man should be discharged without any attempt of that kind; but Mr. Freke thought otherwise, and performed it immediately. The vessels of the diseased process were varicous to a great degree, and very knotty and hard; the connecting membrane was much thickened; the epididymis and testicle quite confounded together; and in the body of the latter was a quantity of bloody sanies, contained in two or three large cells.

The man got no rest after the operation, the vessels of the dartos bled through all the dressings more than once, and in a few hours he became very hot and restless, with a pulse quick and hard.

The next day he bled again, not from the chord, but from the whole dartos; his scrotum became much swelled, and loaded with a lymphatic kind of tumefaction, but was very little

inflamed; his pulse was inconceivably rapid, but small; he complained of acute pains in his back, a burning heat within it, an intolerable thirst, and an anxiety that was more terrible to bear than all the rest; toward night (of the second day) his pulse faltered, he became easy, and his extremities cold; and early on the third morning he died.

CASE XLVIII.

A HEALTHY man, under forty, came to me with a complaint in one of his testicles, the epididymis of which was much enlarged and hardened, while the body of the testis seemed to be in a natural state.

His age, his general appearance, and the particular state of the part, induced me to believe it to be venereal; but, upon asking him a few questions, he asserted, that he had never received any taint of that kind in his life. He said, that the first time he had ever taken notice of this complaint, was about six weeks before, after riding hard in the day, and dancing all night; that it was very small at first, had increased gradually, and now began to be very troublesome to him, either in riding or walking; and that not only from its mere weight, but from frequent pain in it.

I am obliged to acknowledge, that I was at this time so prejudiced by the generally prevailing doctrine, that a true scirrhus or cancer never began in the epididymis, that I thought,

either that my patient was deceived himself, or had a mind to deceive me.

I therefore gave him a mercurial pill to take every night, consisting of a small dose of calomel, with some kermes mineral, and directed a small portion of ung. mercur. to be rubbed every evening into the spermatic process.

By pursuing this method for about ten days, his mouth became sore, and he was much displeased thereby. I gave him some gentle cathartics, but his spitting kept at above a pint a day, for more than a fortnight: at the end of which time, the hardness, as well as size and inequality of the epididymis and vas deferens were manifestly increased; and his uneasiness in these parts was greater.

The death of a near relation now called him into the country, where he staid about a month. At his return, he sent for me. The disease was increased, but still confined to the epididymis; which was now in that state, which I suppose constituted the caro adnata of the ancients: it was hard, craggy, painful, and in size nearly equal to the testicle itself; the darting pains were frequent; and the uneasiness from its weight was constant and tiresome.

I was now satisfied of the true nature of the case, and let drop a hint of the propriety of removing the part; but having a very delicate and timorous man to deal with, I desired him to take the opinions of some other gentlemen.

He saw Mr. Middleton and Mr. Nourse as surgeons, and a third gentleman as a physician.

The two former advised immediate castration; the last seemed to wish him to take the cicuta, or the solanum, medicines then in fashion. The thought of castration shocked him so much, that he willingly embraced any hints concerning specifics.

He took the cicuta for more than two months, beginning with a small dose, and increasing it gradually to very large ones. It now and then made him a little sick and giddy; but the disease increased under it so manifestly, that I was apprehensive that we were doing much worse than merely losing time. I signified my suspicion, and pressed the operation; but he would not hear of it.

The solanum was now tried under the direction of the doctor; but it disagreed so much, even in the smallest quantity, that there was no possibility of persisting in it.

Upon this, as upon most occasions of this kind, every acquaintance recommended either a specific or a quack: most of which were tried, and I saw no more of my patient for above four months.

He then sent for me again. The whole testicle and spermatic process, quite within the belly, were thoroughly diseased, hard, and knotty, his pain was acute, and almost constant; and his whole appearance truly pitiable.

He was much displeased that I, who had

often pressed him to submit to the operation, would not now perform it; but it was too late. In a few days after this visit, he applied to an operator; who required a very considerable fee before-hand, and laid the whole spermatic process open. A very terrible hæmorrhage ensued, and he died the next day in inexpressible agony.

I visited a patient with Mr. Markland, whose first local complaint was a hardened, enlarged, epididymis, and vas deferens; and upon whom the whole power of mercury, and other supposed deobstruent medicines, together with cataplasms, fomentation, &c. were tried, during a long space of time, in absolute confinement, but to no good purpose; the part became so large, so diseased, and so painful, and the habit of the patient so much affected by it, that extirpation was absolutely necessary. When the part was removed, I examined it very carefully; and never saw a more true and perfect scirrhus in my life. The epididymis was thrice the size it ought to have been; its external surface was very unequal, and very hard; and in the center of it was a putrid slough, with a small quantity of matter, just as it is found very often in the middle of a scirrhus and cancerous testicle. The testicle was hardly, if at all, altered from a natural state, except that the tunica vaginalis was generally adherent to the albuginea. Its internal texture was soft, and bore very little mark of distemper.

I have, at this instant, a lad in St. Bartholomew's hospital, both whose testicles are so truly diseased, that they must of necessity be removed. I have seen him from the first of the attack. The disease for several months occupied only the epididymis; and had no connexion with, or dependence on, any venereal mischief. Every thing that the art of surgery could do (or at least every thing that I am acquainted with in it) has been tried, but without any effect; and nothing but the operation can save him.

CASE XLIX.

MR. WILLIAM SHARP desired me to visit a patient with him. The case was a scirrhus testicle. It was large, and very hard; but smooth, equal, and no other way painful, than from its weight. There was nothing in the testicle which forbade the operation; on the contrary, it was in such state, as to promise very fair for success: but the spermatic process, from the testis quite up to, and apparently within, the opening in the abdominal tendon, was so large and full, that it was impossible to feel the vessels. This fulness, and increase of size, if it could be supposed to proceed from a diseased state of these vessels and their membranes, was such a bar to castration, that nobody could possibly think of it in such circumstances: but, on the other hand, if it could be supposed to be owing to an extravasated fluid, the withdrawing such fluid might

make a very material alteration in the state of all the parts. Mr. Sharp said, that he had seen this patient some months before, and had let out (as he thought from the tunica vaginalis) a quantity of water; and that he then found the testicle a great deal too large; and was very sure that he then distinctly felt the spermatic vessels. The tumid process, though large, full, and tight, yet was smooth and equal throughout; and I thought, that I could very plainly feel a fluctuation through the whole of it; that is, from the opening in the oblique muscle, to the upper part of the testicle. The patient was young and healthy, the weight and size of the testicle very troublesome; and nothing but this state of the process in the case, to make it necessary to defer the operation a moment. A puncture was made with a large lancet into the tumor just above the testicle; near a pint of clear yellow serum was discharged; the swelling subsided; the spermatic vessels, which were in a sound, natural state, became easily distinguishable; the operation was immediately performed, and proved successful.

CASE L.

A POOR sailor, who had been discharged from one of the navy hospitals, applied to St. Bartholomew's.

He had a scirrhus testicle, which was not

large, but was as hard as marble: very craggy and unequal, and attended with frequent acute pain: the process also was so large, that, upon such examination as I had then time to make, I told the man, that I did not conceive that he could receive any benefit, even from the operation; but one of the governors, prevailed on by the man's solicitation, desired that he might be admitted.

The first time we were all met together, I produced this man for the general opinion; which was, that if the increased size of the spermatic process was the effect of a diseased state of the parts composing it, the operation was improper, as it would only hasten the man's death, and that in a very painful manner; but if it could be thought to be owing (as in the preceding case) to an extravasation of fluid in the common membrane, it was certainly worth while to try what the discharge of that fluid might produce.

The whole was related to the man: he was informed of our doubts, of what we intended to do, and of the probability that it might be of no service to him; a puncture was made in that part of the process where the fluid was most palpable; a large quantity of lymph was discharged, the tumor subsided, the spermatic vessels became very distinguishable; the operation of castration was immediately performed, and the man went out from the hospital well.

CASE LI.

A POOR man was taken into St. Bartholomew's hospital, for a complication of complaints; but particularly for a frequent and acute pain in his back and belly.

When he had been there a day or two, he told the nurse, that he had a complaint in his scrotum; and the next day I was desired to look at him.

He had a diseased testicle of the scirrhus kind, which was not very large, but was hard and unequal; the spermatic process was not in a natural state, nor very much diseased; and he had a large and very troublesome omental hernia. The man had also a very morbid aspect; had his rest frequently disturbed by pain, and was near to fifty years old.

He was very solicitous to have something done for him, and willing to submit to any thing for that purpose; but his case was such, as to render it not an easy matter to determine what to do.

His rupture was large, and very troublesome: it was merely omental, and could not be kept up a moment, while he was in an erect posture, without a truss: a truss he could not wear to any good purpose, without the pad of it pressing on the spermatic chord, and aggravating a greater evil than his rupture; *viz.* his scirrhus testicle. The weight of his rupture, added to that of his scirrhus, rendered it impossible for him to get his bread by labour.

The only method whereby he could be made capable of wearing a proper bandage for keeping up his rupture, or even of suspending it with ease, was, by submitting to have the scirrhus testicle removed by castration; and then, his rupture being returned, he might be enabled to wear a truss. But to this there were some objections. In the first place, the hernial sac came so low, that the process could not be tied, or cut off, without the sac having been first either laid open, or dissected off from it. In the next place, I did not like the state of the spermatic process, which was both too large and too hard: and, in the third place, I thought the general circumstances of his morbid appearance, and bad state of health, were great objections to operations of such consequence, as either the laying open, or dissecting of the hernial sac from the spermatic process, or castration.

All this was related to the man in the fairest manner possible; and he desired to have such, or any operation performed, which I should think right.

Having been confined to his bed for more than a week previous to the operation, the omentum had hardly ever been down during that time, and was now perfectly up. This, though it might prove a circumstance in the man's favour, was none in mine as an operator; for the hernial sac being empty and flaccid, gave me thereby more trouble. The hernia was of the congenial kind; and, consequently, when I had divided the sac to the bottom, the state of the spermatic

chord and testicle was manifest; and I had only to pass my needle and ligature round the upper part of the former, without paying any more or particular regard to the hernial sac. Upon a nearer view of the state of the process, I liked it still less than I had done before: but there was nothing now could be done, but to go through with the operation, and to take the chance of it. I did so; the man bore it well, and was better, for the first two or three days, than I could have expected. After the first week was past, I was daily surprised at the good state of my patient. He was easy, free from pain or fever, slept well, took nourishment; and it was impossible for any sore to be or to look better.

At the end of three weeks, when he was to all appearance well, and his sore almost healed, he was suddenly seized with pain all over him, and died on the second or third day from the attack.

I had him opened. The portion of omentum, which had formed the hernia, had an attachment to the peritoneum, just within the mouth of the hernial sac; which, I suppose, was the reason why it could not be kept up while he was erect. The lymphatic glands about the lumbal vertebræ were all diseased; the liver was scirrhus throughout, and had a large collection of matter in its lower part.

END OF THE SECOND VOLUME.



